

PREFACE

The *Motor Boys International* is an informal group of men from around the world with a common interest concerning the history, design and construction of model engines.

Communication is made possible by the internet. Each one of the motor Boys has unique talents that, when pooled into joint projects, adds to the enjoyment of their hobby.

The public face of the Motor Boys exists as the *Model Engine News* web site, the property of Ron Chernich. Sadly the loss of Ron means that the site is available but frozen. One of the products of the Boys was a significant collection of CAD engine drawings, many being available freely on the web site. Some of these drawings have been published in the now out-of-print *Model Engine Plan Book*. There was in addition a collection of plans available to the Boys themselves and to members of the public who paid a small fee to become members, and although these are on the web site, they are password protected and not freely available. These are generally known as the *members-only* plans.

The Motor Boys group, in part due to the passing of a number of members, is now inactive. It is seen as a good thing for the *members-only* drawings now to be made available to all. We believe that there are no copyright issues preventing publication.

This small volume contains all the *members-only* plans duly updated by the author with any known changes.

Most of the text and many of the images have been plagiarised from a variety of sources.

All of the plan sets were produced in CAD format by Ron Chernich.

The Motor Boys International are:-

George Aldrich USA [deceased].
Gordon Burford Australia [deceased]
Ron Chernich Australia [deceased]
Ken Croft England [now France]

Tim Dannels USA

Don McClusky USA [deceased]
David Owen Australia [deceased]

Stan Pilgrim Australia

Roger Schroeder USA [deceased]

Bert Striegler USA

Ken Croft

TABLE OF CONTENTS

Ace	0.5cc diesel	4
Vega	0.25ci glowplug	10
Belmont G9	9cc spark ignition	25
Black Mamba	0.049ci glowplug	31
Chunn	0.16ci spark ignition	40
Clanford Clan	0.24cc diesel	46
Cygnet Royal	3 cyl radial steam	50
D A Satellitt	1cc diesel	55
Embee	0.6cc diesel	66
Little Dragon	0.06ci diesel	72
Micron	5cc fixed-compression diesel	76
M L Midge	0.8cc diesel	82
M S 1.24	1.24cc diesel	87
P M C Imp	0.6cc diesel	94
Simplex 25	0.25ci spark ignition	100
Sparev Twin	2cc diesel	106

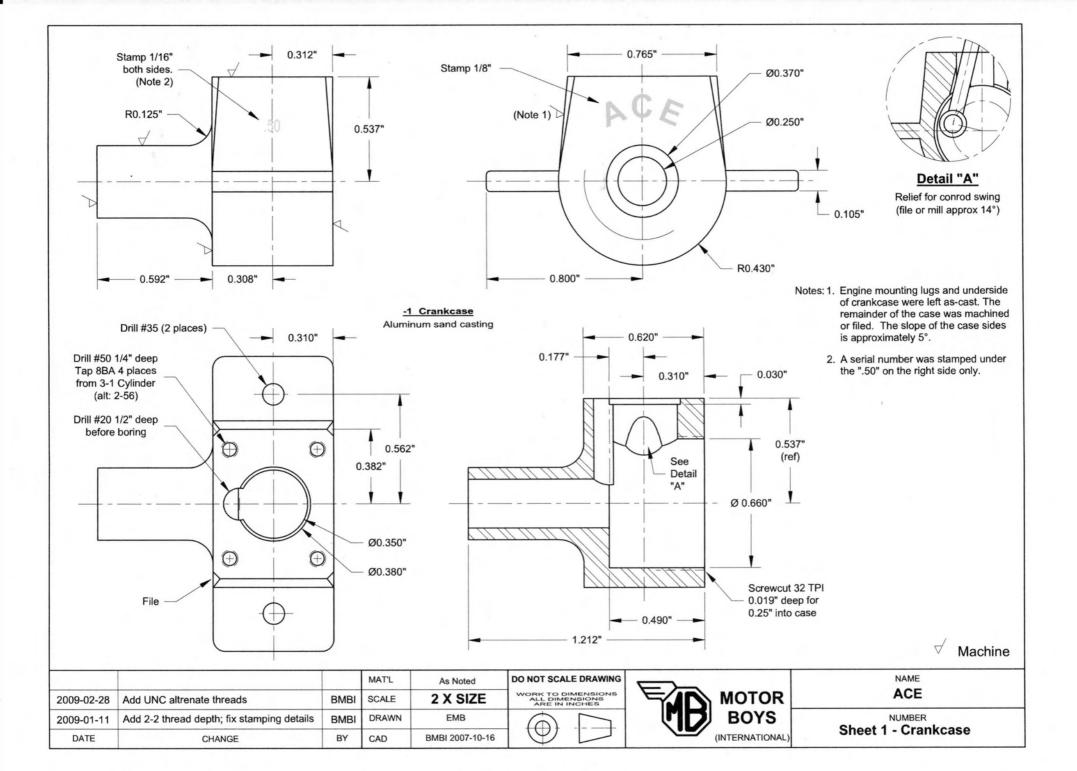
The ACE 0.5cc diesel

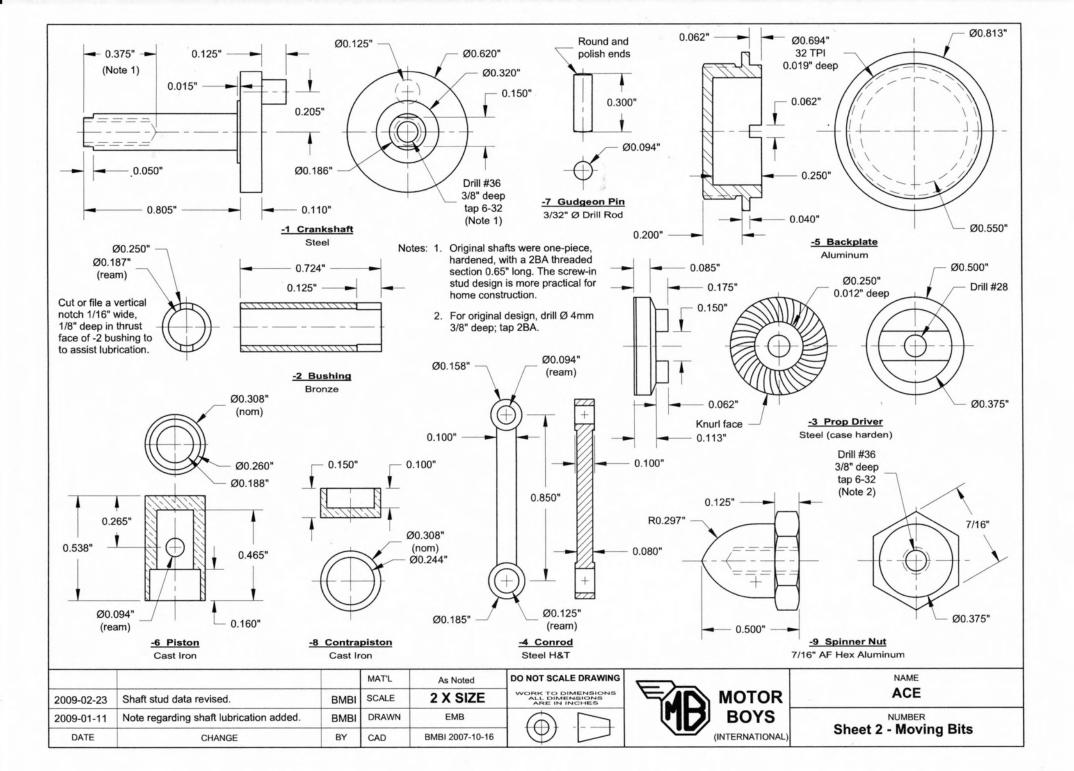


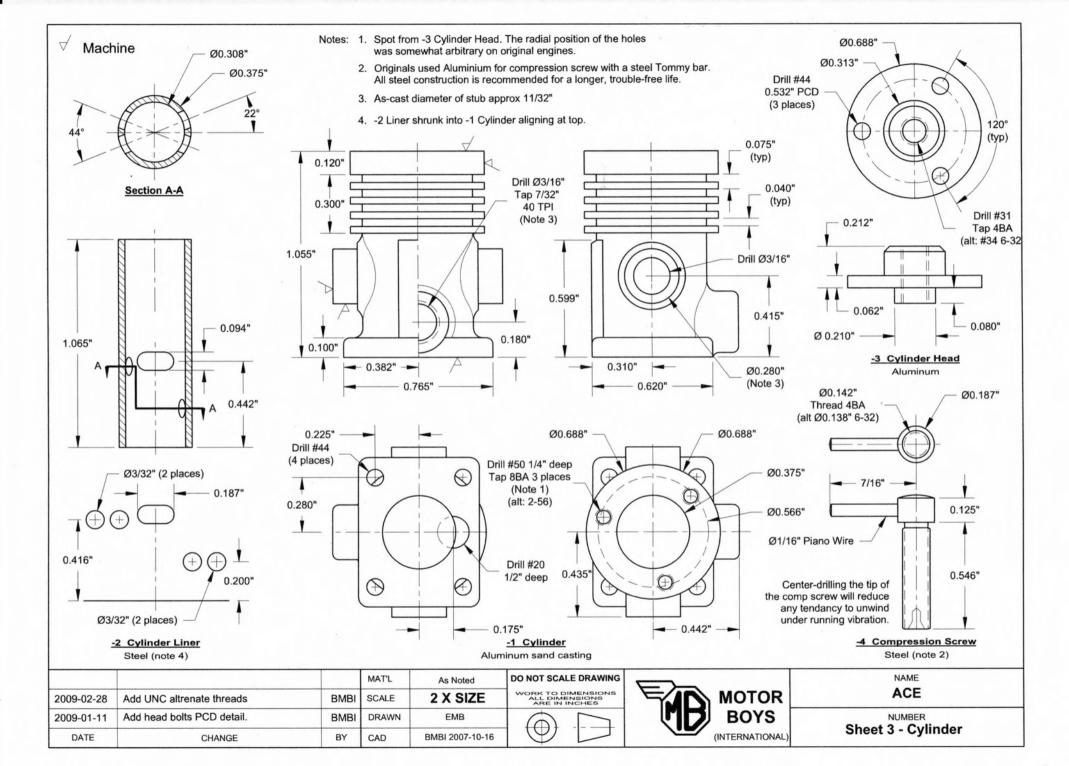
The ACE 0.5cc diesel was commissioned by Harry York, owner and manager of *Model Aircraft Supplies Ltd*, 171 New Kent Road, London SE1. The first press announcement for the engine we have been able to find appeared in the April 1947 issue of *Model Aircraft*. The first actual advertisement for the engine appeared in the June 1947 issue of *Model Aircraft* carrying the price £4-10-0. So we can say that Britain's first 0.5cc diesel appeared in mid 1947 and lasted about two years.

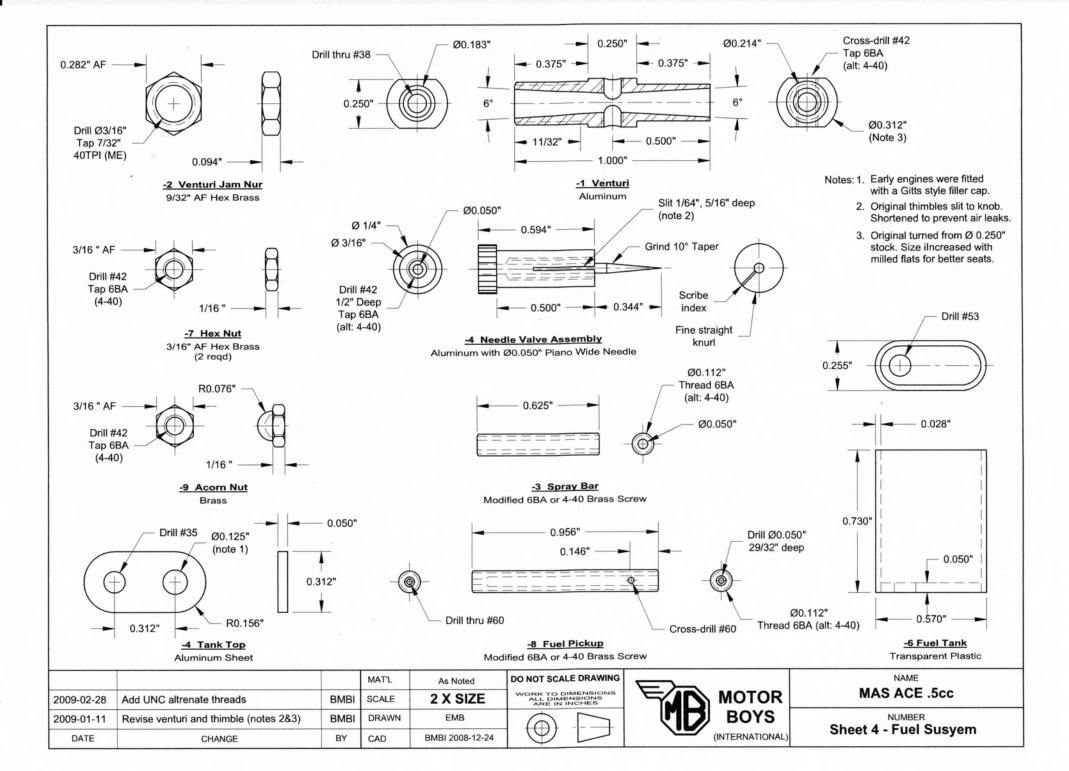
Reproduction castings have been available in the past and hence reproductions of this engine occasionally appear on auction sites.

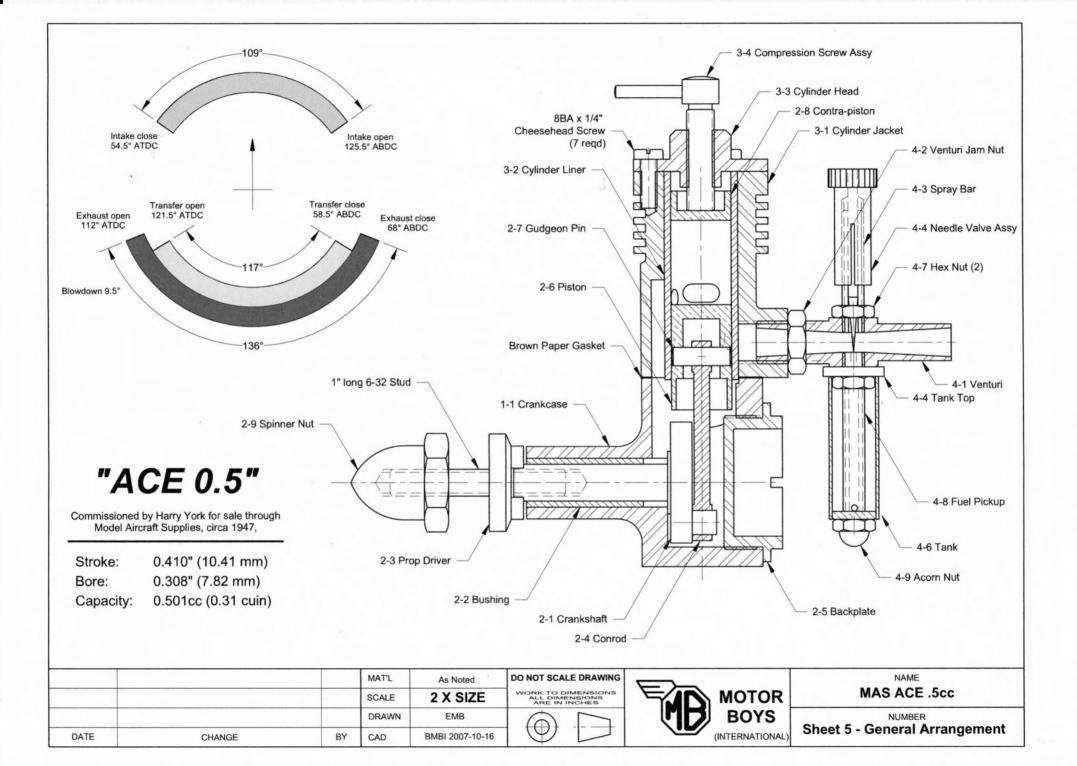
Originals of the Ace are very rare.









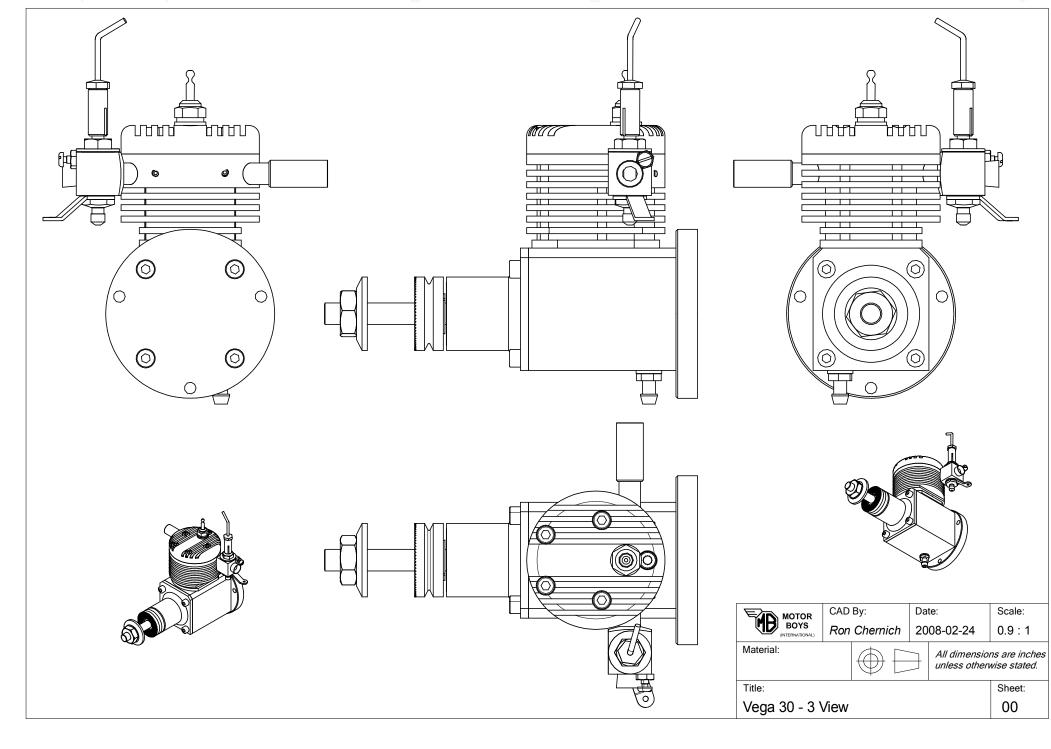


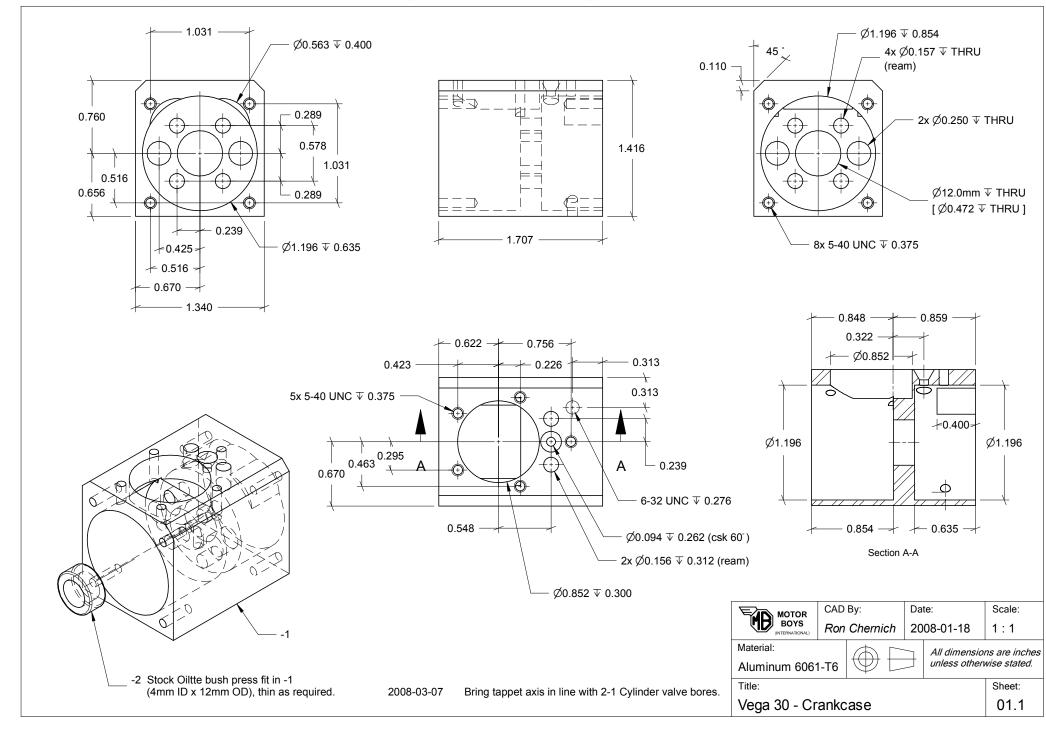
The VEGA 30 4-stroke glow-plug engine.

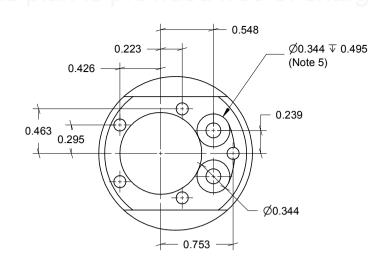


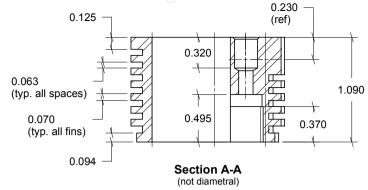
The Vega range was designed and built from the late 1980's through to the mid 1990's by John Harbone of Birmingham, England. His intent was to provide a range of engines for sport or scale flying that would be quiet and reliable. They were manufactured in small quantities from bar-stock until ill-health forced an end to the venture. The rights to all the designs were sold on with the intention that they continue in production, but sadly, this did not eventuate.

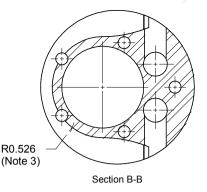
The initial models were all side-valve four-strokes. The range also included a .61, .25 and a horizontally opposed, alternate firing twin using the .25 cylinders to give .50 cu in total displacement. Towards the end of production, .61 and .91 cu in displacement over-head valve (OHV) prototypes were made although they did not reach "production". All models are comparatively rare today, but they do appear occasionally as collectables. Each model was offered in two versions. On type "A", the carburettor and exhaust were oriented to the rear of the engine, while type "B" placed then on the side of the head. Company advertising stressed the enclosed valve gear, free from tappet adjustment, the compact size, "solid" (bar-stock) construction, quiet running, and ability to idle for long periods with instant throttle response.





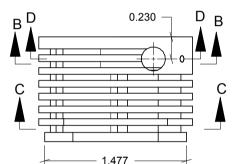


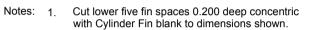




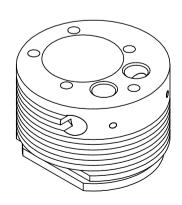
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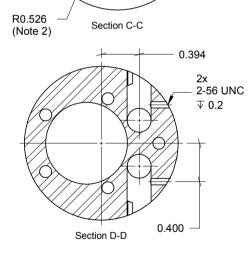
R0.680 (Note 1)

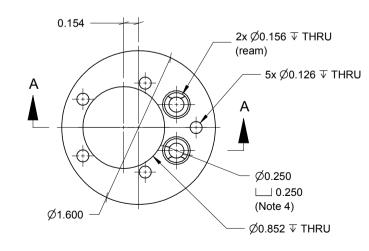




- Deepen lower five spaces with a 1/16" thick 2.5" dia. slitting saw rotated through an arc of 200° around the cylinder liner bore.
- Upper two spaces are cut like the lower five spaces on a reduced arc of 180°.
- 4. Chamfer valve seats 45° at same setting to produce a seat no more than 0.016" wide.
- Plunge cutter 0.495" deep concentric with reamed valve guide holes. Raise to 0.370" deep and join pockets concentric with cylinder liner bore to create space for insertion of valve retainer clips.







Material:

Aluminum 2024

Title:

Vega 30 - Cylinder Jacket

Date: Scale:

All dimensions are inches unless otherwise stated.

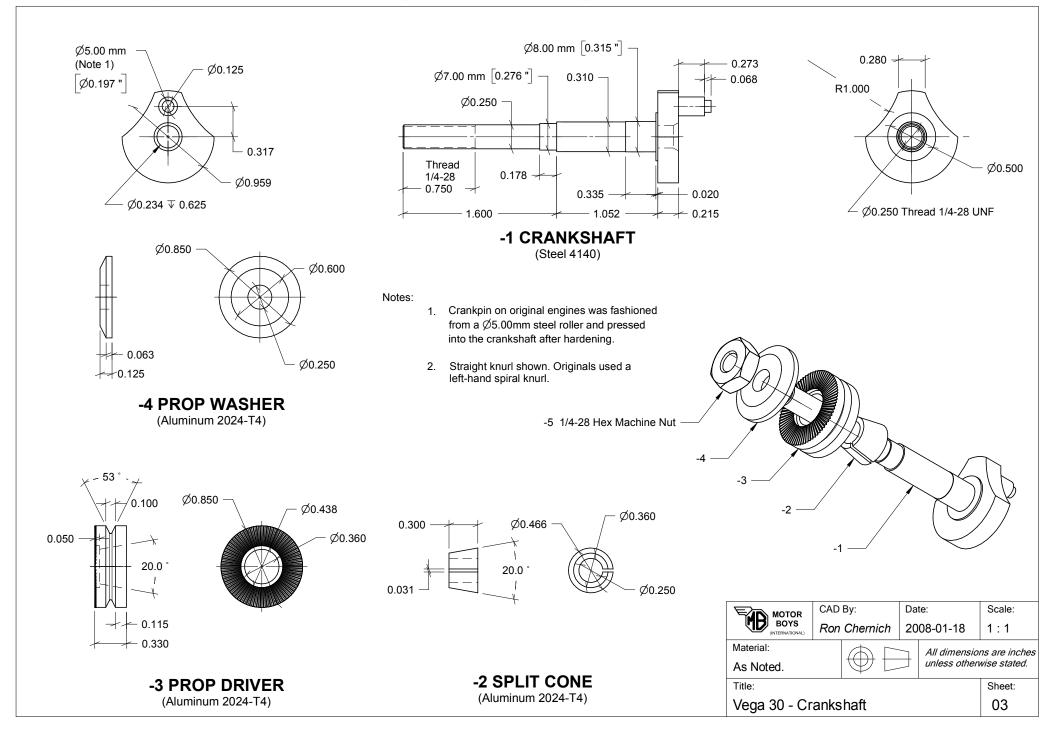
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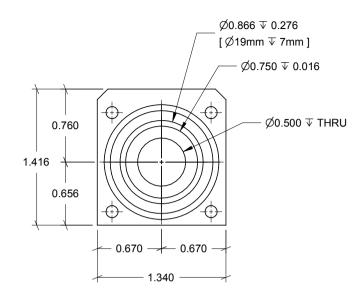
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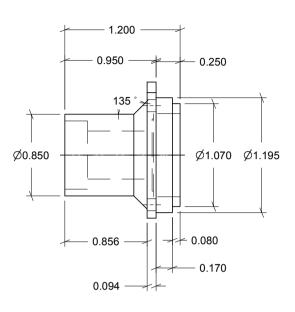
All dimensions are inches unless otherwise stated.

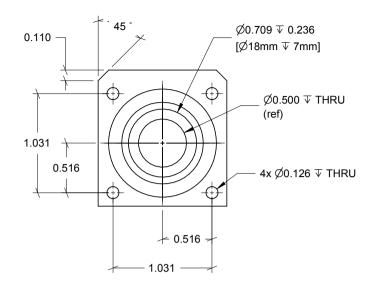
O2.1

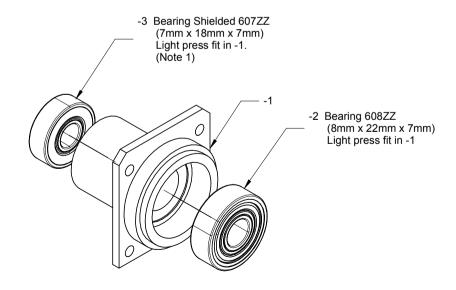
2008-03-07 Revise Section A-A and Notes.





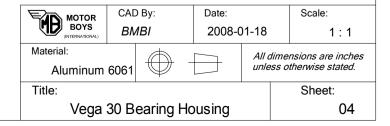


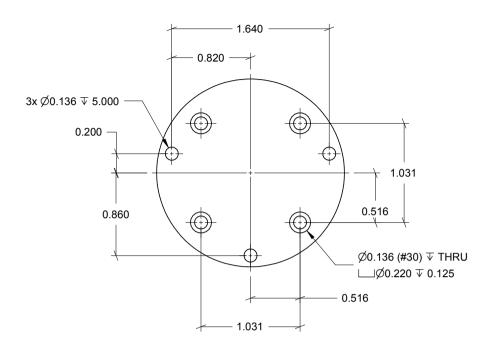


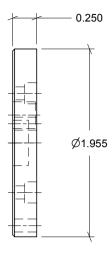


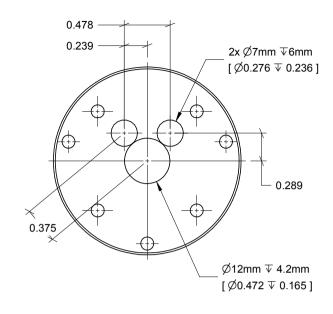
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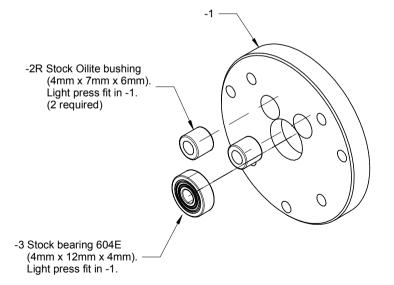
 Original engines used an R4Z Imperial bearing in front (0.250 x 0.625 x 0.198). If this bearing is used, the front recess in the -1 Bearing Housing should be modified accordingly and the Ø7mm step on the 03-1 Crankshaft omitted.











MOTOR BOYS
(INTERNATIONAL)

Material:

Aluminum 6061

Title:

Vega 30 - Backplate

CAD By:

Ron Chernich

2008-01-19

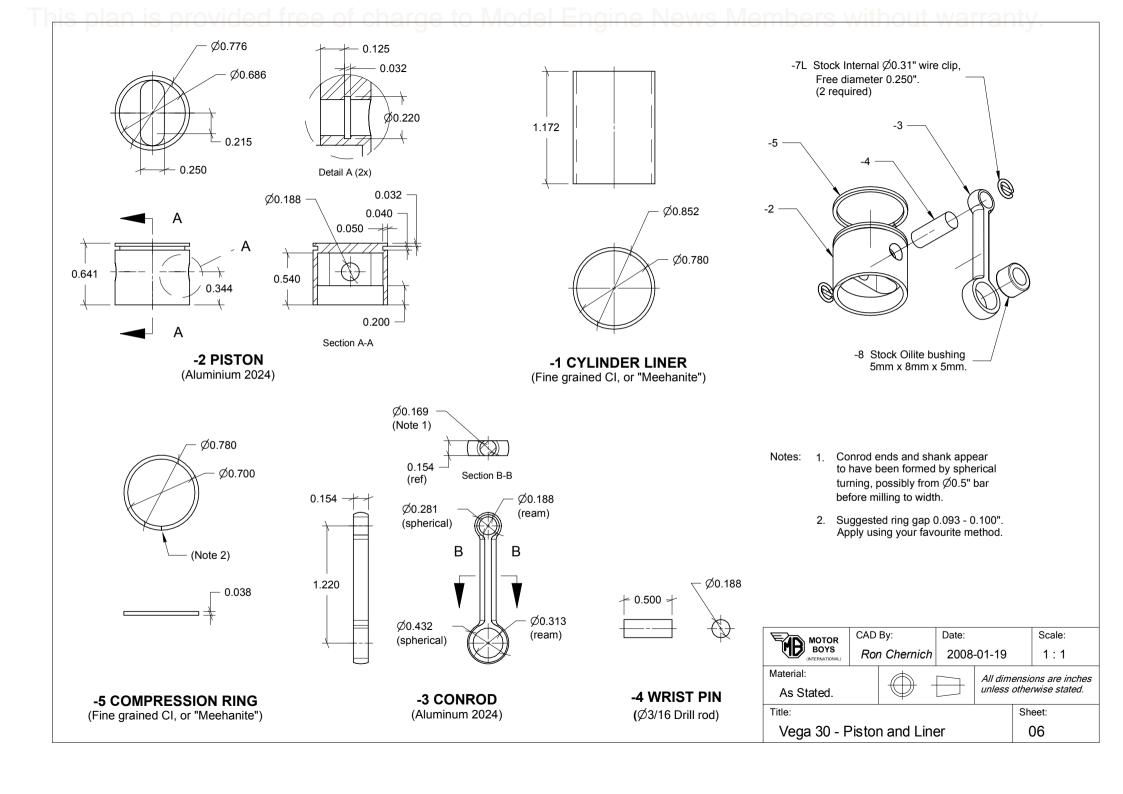
1:1

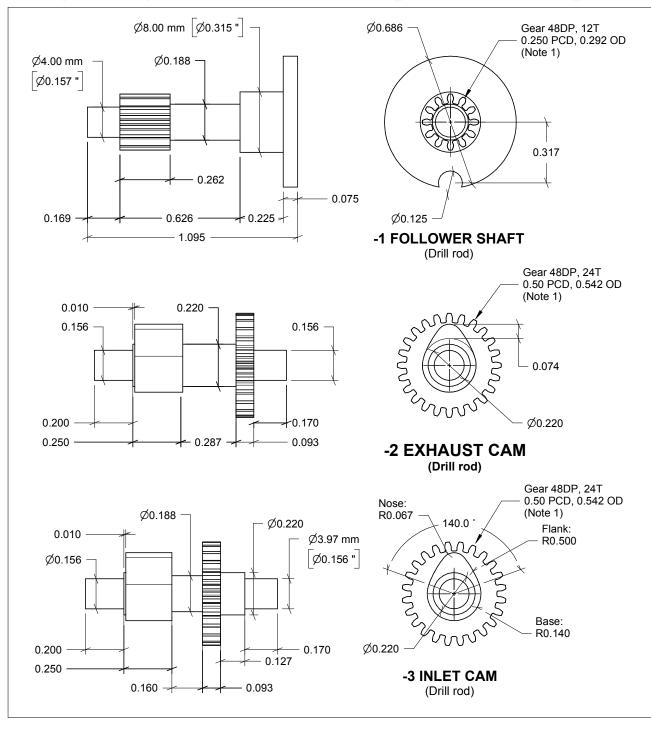
All dimensions are inches unless otherwise stated.

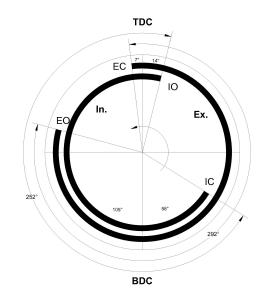
Sheet:

05.1

2008-03-06 Correct location of cam busing bores to match 1-1 Crankcase.







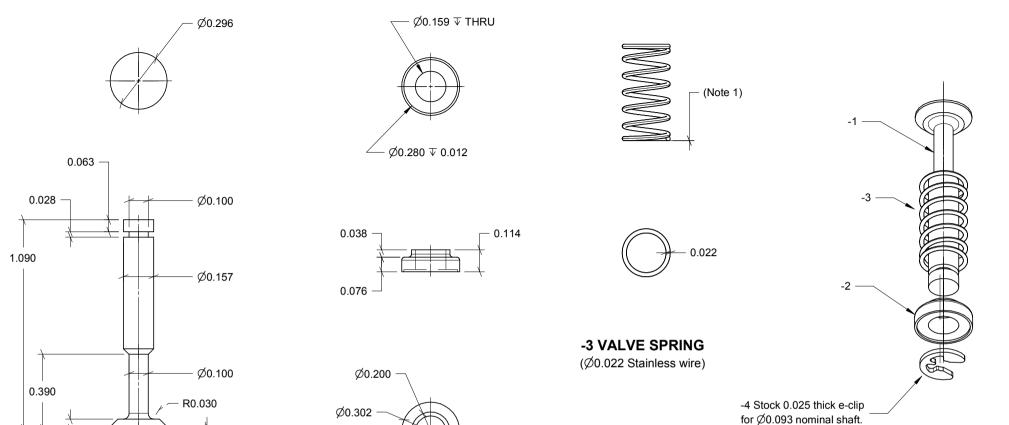
Notes: 1. All models in the Vega range used one-piece cam shafts with the gear teeth cut and cams formed before nitriding. Constructors not wishing to replicate this can simplify construction with commercially made gears pressed or glued onto the shafts. A similar approach would be permissible for the cams themselves simplifying alignment.

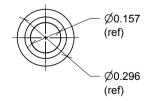
2. Inlet and exhaust cams have the same profile:

Base Circle: Ø 0.240" Flank Radius: 0.500" Nose Radius: 0.067" Lift: 0.074" Angle: 140°

 The inlet and exhaust durations in the timing diagram represents measurements taken from a single engine.
 The difference in exhaust and inlet durations is due to the variation in tappet length and hence, clearance.

MOTOR	CAD By:		Date:		Scale:
BOYS (INTERNATIONAL)	Ron	Chernich 2008-01-21		2:1	
Material:		Ф Г	7	All dimension	ns are inche
As Noted			\exists	unless other	wise stated.
Title:					Sheet:
Vega 30 - Camshafts				07	





0.012

-2 VALVE CAP (Bronze)

Notes: 1. Valve springs wound with \emptyset 1/4" outside diameter; five (5) complete turns with a free length 0f 1/2" and closed, unground ends.

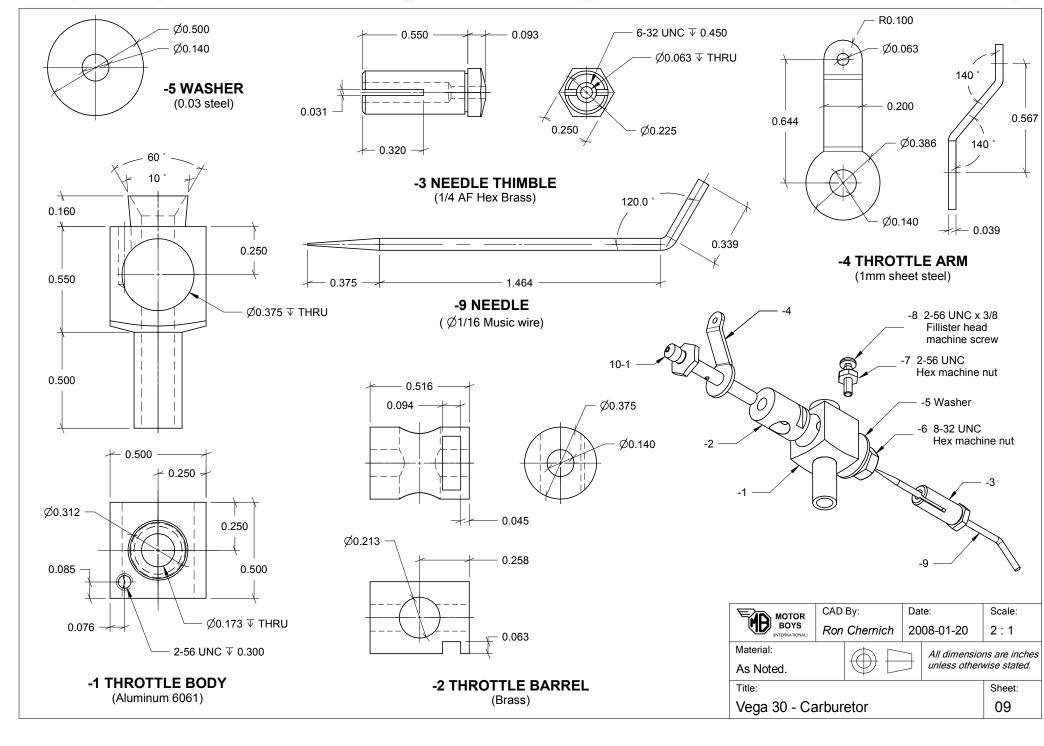
MOTOR	CAD By:		Date:		Scale:
BOYS	Ron Chernich		2008-01-19		2:1
Material: As Noted				All dimensions are inch	
				unless otherwise stated	
Title:					eet:
Vega 30 - Valve Gear					08

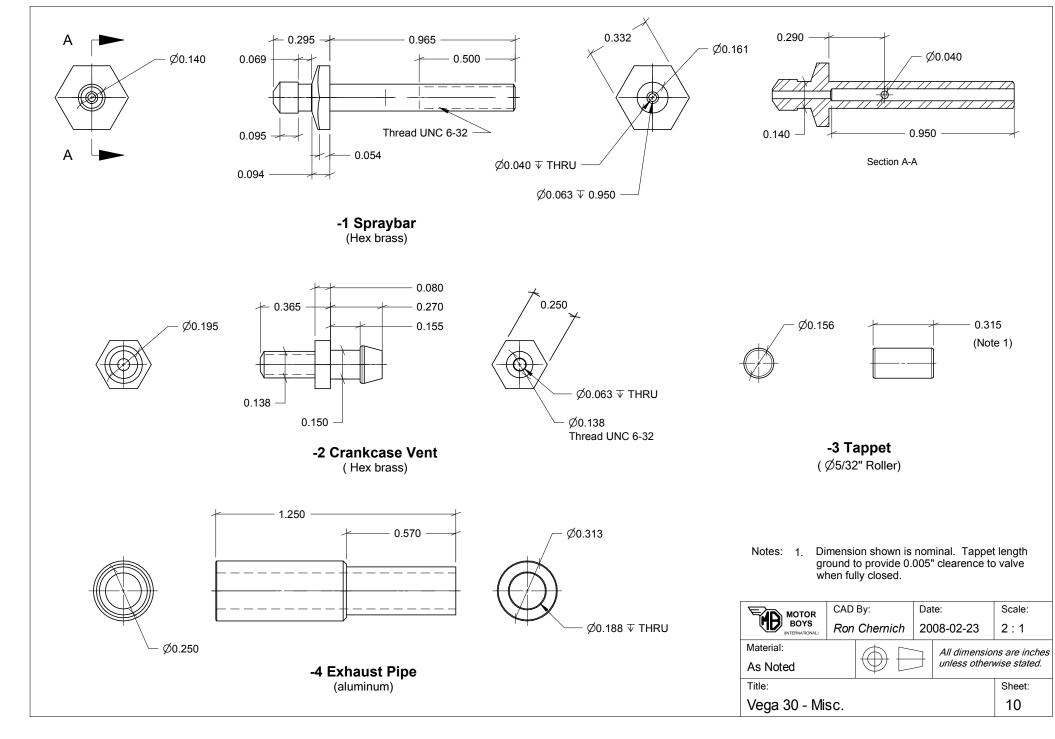
-1 POPPET VALVE

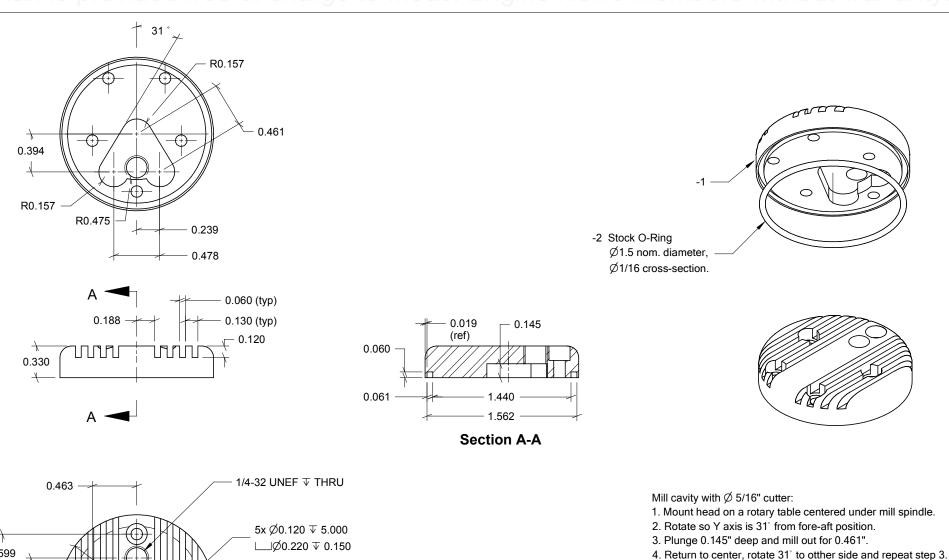
90.0

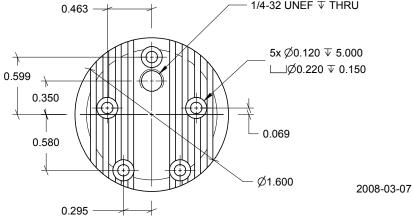
0.052

(Stainless Steel)







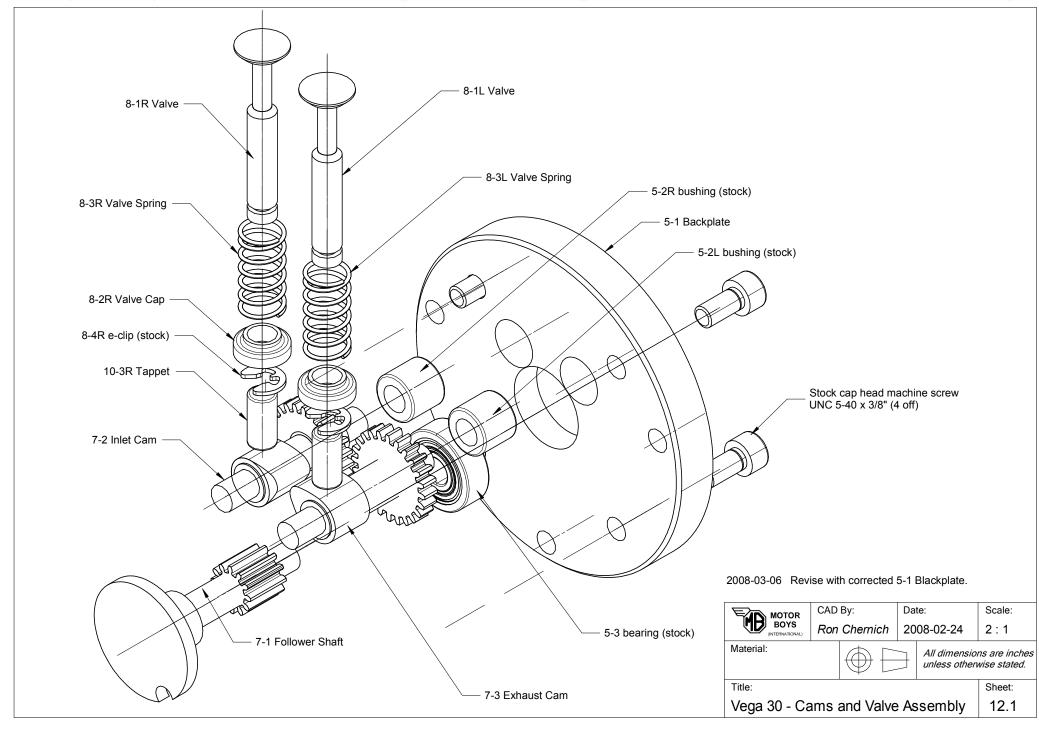


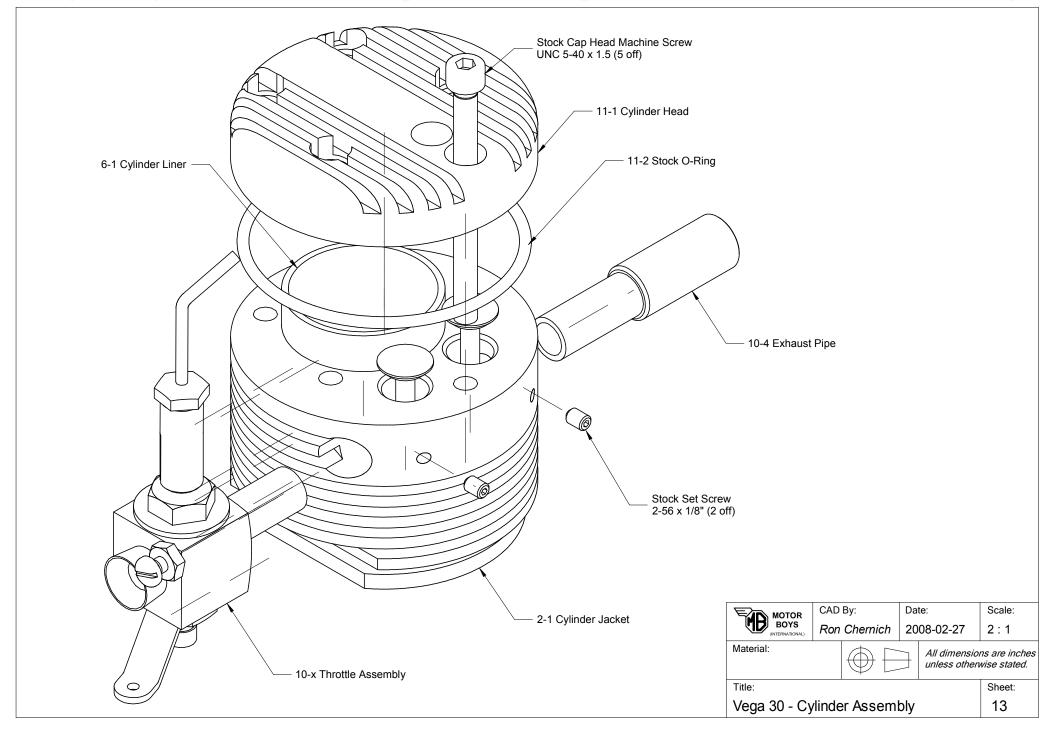
Correct placement of valve pockets to align with 2-1 Cylinder valve axis.

2008-03-06 Correct drawing number in title block.

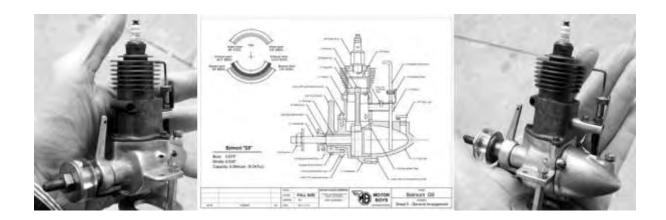
- 5. Move cuter axis to 0.319" from center and rotate the table to connect the two slots. Remove the remaining island.

MOTOR	CAD By:		Date:		Scale:
BOYS (INTERNATIONAL)	Ron	Chernich	2008-01-20		1:1
Material:		A L	7	All dimension	ns are inches
Aluminum 606	1-T6			unless other	wise stated.
Title:					Sheet:
Vega 30 - Cylinder Head			11.2.1		

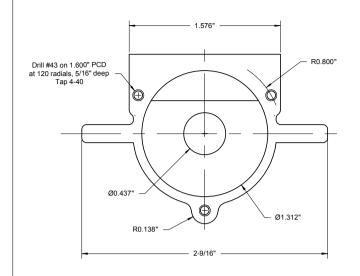


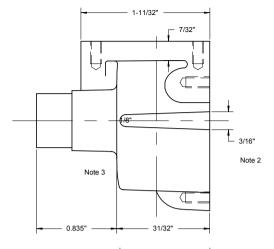


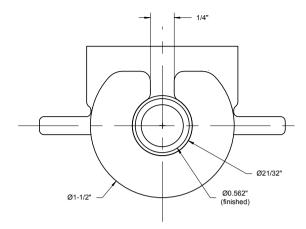
BELMONT [or IMP] G9 ignition engine.



This engine was first advertised in 1939 by "International Models [Products]" of New York as the "G9". The ads quoted a bore of 7/8" and stroke of 15/16". Later, the manufacturer seems to have moved to Boston, changed their name to "Belmont Miniature Motors" and the engine became known simply as the *Belmont*. No ad we've been able to trace ever stated the capacity, only the bore and stroke, although Model Airplane News in their annual gas engine round-up for 1940 and 1941 quote the calculated capacity. The engine had disappeared from sale by 1942, precisely when, we don't know. Based on photos accompanying the various advertisements, it appears the G9 had a cast, streamlined tank, while the "Belmont" had a cylindrical tank secured under the venturi tube as per common practice.

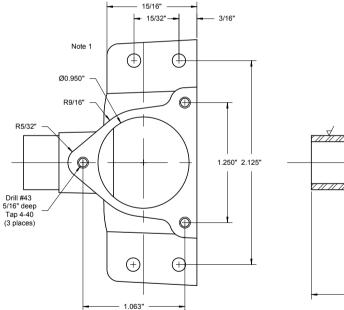


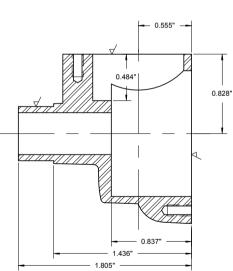




Notes: 1 Dimensions shown give maximum external dimensions.
Crankcase was cast as a plug with no separation lines so all draft angles reduce dimensions towards the front.

- 2 Note engine lugs are symetrical around crankcase center line. These were un-machined on the original resulting in a natural two degrees of downthrust when mounted flat.
- 3 Front face of case lightly domed approx 1/32".





-1 CRANKCASE

Aluminum Casting

√ Machine

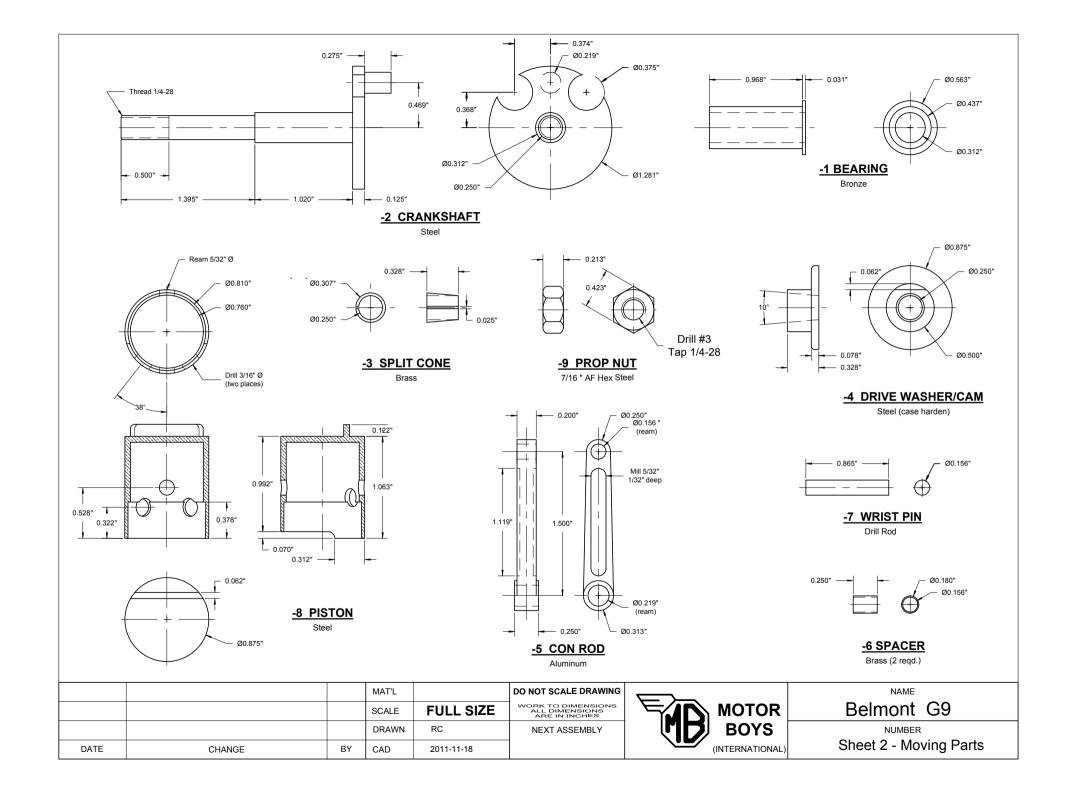
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			DRAWN	RC	NEXT ASSEMBLY
DATE	CHANGE	BY	CAD	2011-11-18	

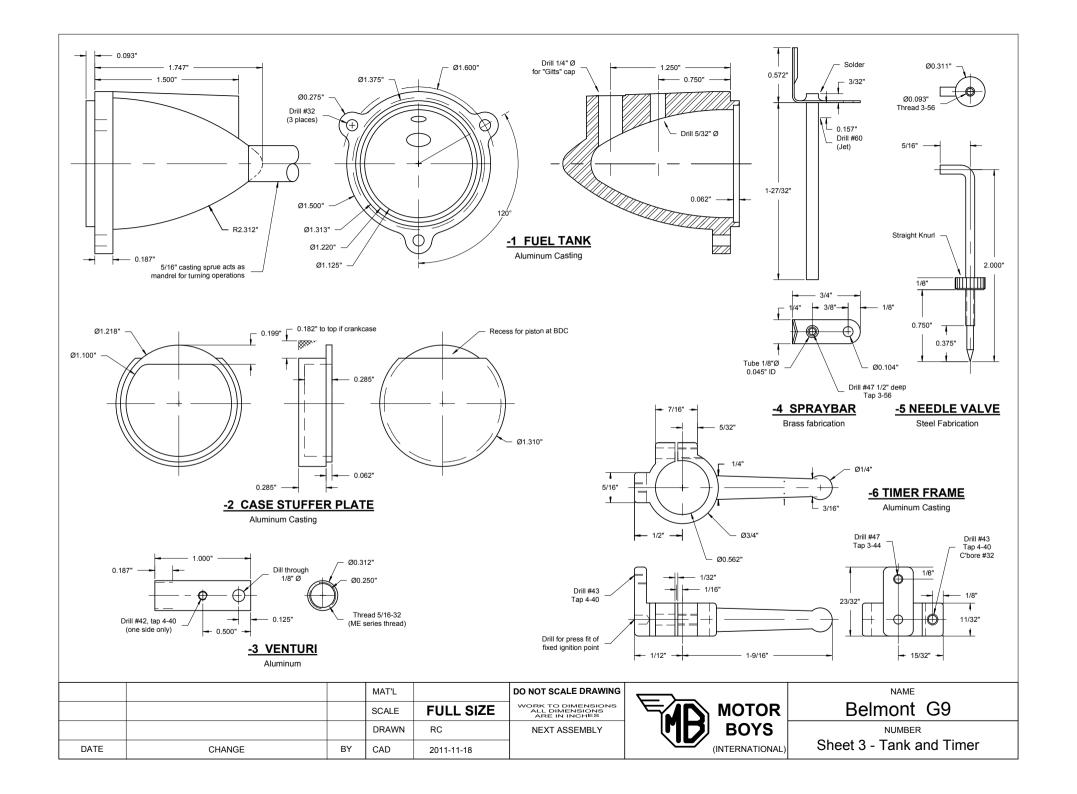


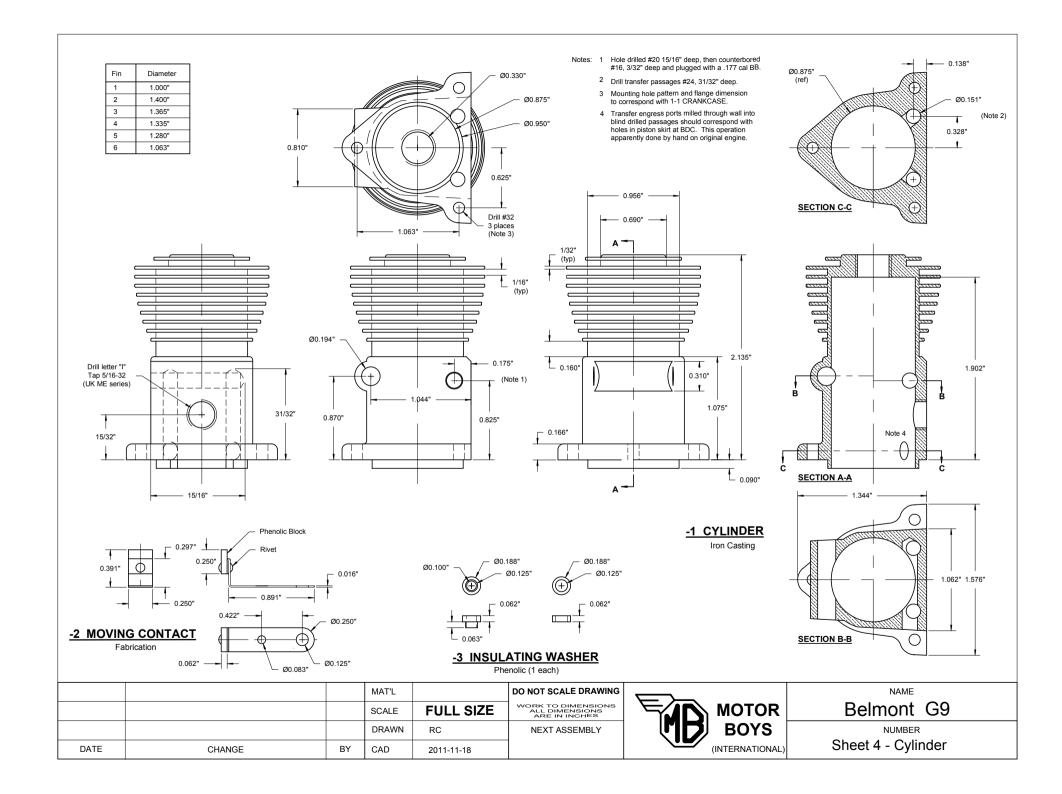
Belmont G9

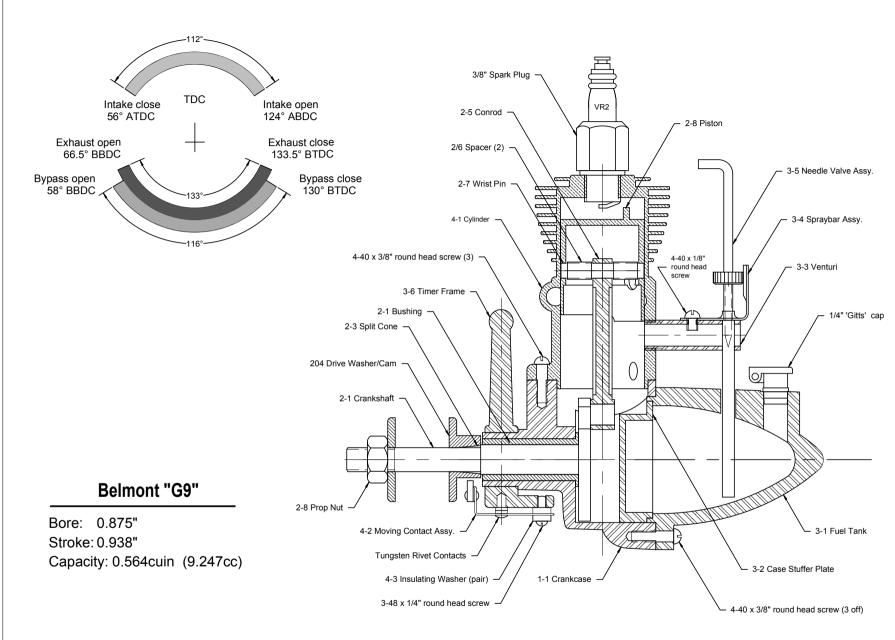
NUMBER

Sheet 1 - Crankcase









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			DRAWN	RC	NEXT ASSEMBLY
DATE	CHANGE	BY	CAD	2011-11-18	

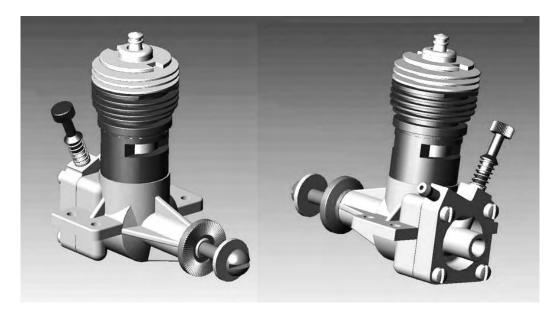


Belmont G9

NUMBER

Sheet 5 - General Arrangement

BLACK MAMBA [after the Keilkraft COBRA]

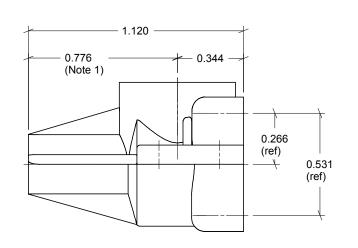


I have no idea what purpose this design is meant to serve and I even wonder if Ron had been on the magic mushrooms when he thought it up! There are shed loads of Cox-type 049 glows to be had for the price of peanuts, so why another one? And what satisfaction is to be had from building an engine when the vital parts are just parts of a production engine? That is hardly any achievement at all. In the event there is no evidence that anything became of this design; I do not believe any engines were ever built, nor even were crank-cases made available. I include the design simply because it was one of Ron's free "members only" plans. The above are simply CAD productions.

Rant over, so here is Ron Chernich's own explanation.

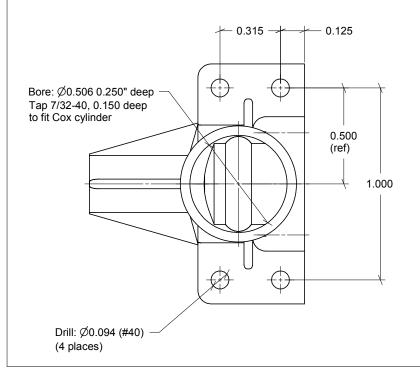
From looking at the web server logs, the Keilkraft Cobra 049 which featured as Engine of the Month for April 2008 really struck a resonant chord with MEN readers. So after talking it over, I've made a set of plans for what we are going to call the *Mamba*. This will be a Cobra look-alike using Cox 049 parts in a sand cast case. The plan is a little different from our usual fully detailed, model engine construction set, but still runs to eight 3D CAD pages even though the stock Cox parts are not detailed. The plans show two different styles for backplate machining to suit the old beryllium copper reed with wire circlip retainer, or the newer synthetic reed and plastic retainer cage. The letter style makes for much easier machining, so would be the one to scavenge if you can. I'd also try to get a Cox Black Widow cylinder and piston assembly in preference to the old single transfer Baby Bee, or even the twin slit QZ exhaust version.

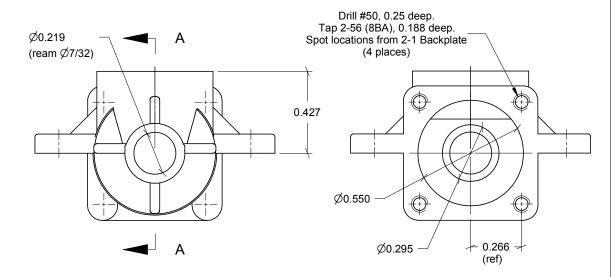
The plans include details of a jig that will greatly simplify one of the critical areas, namely how to align and drill all the holes for the needle valve bush, fuel jet and fuel nipple using a lathe only. All work could be easily accomplished on a small tabletop machine like the excellent little Sherline and the jig drawing has been dimensioned for this lathe. Owners of larger machines can easily adapt the jig from the data provided. Builders will need castings for the crankcase and backplate. Dirk Tollenaar who supplies the Bob Shore PeeWee kit is looking into supplying these, and an option, if practical, to include a finished needle valve bush tapped with the unusual and very fine 4-80 thread.

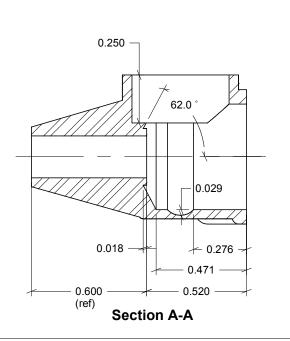


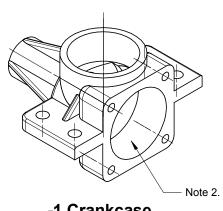
Notes: 1. Adjust for approx 0.010 free-play between the case front and prop drive washer.

Bore 0.520 deep with Ø0.375 two-flute milling cutter.
 Drill and ream Ø 7.32 for crankshaft.
 Open to Ø 0.550, 0.471 deep. Finish with 7-1 D-Bit reamer.



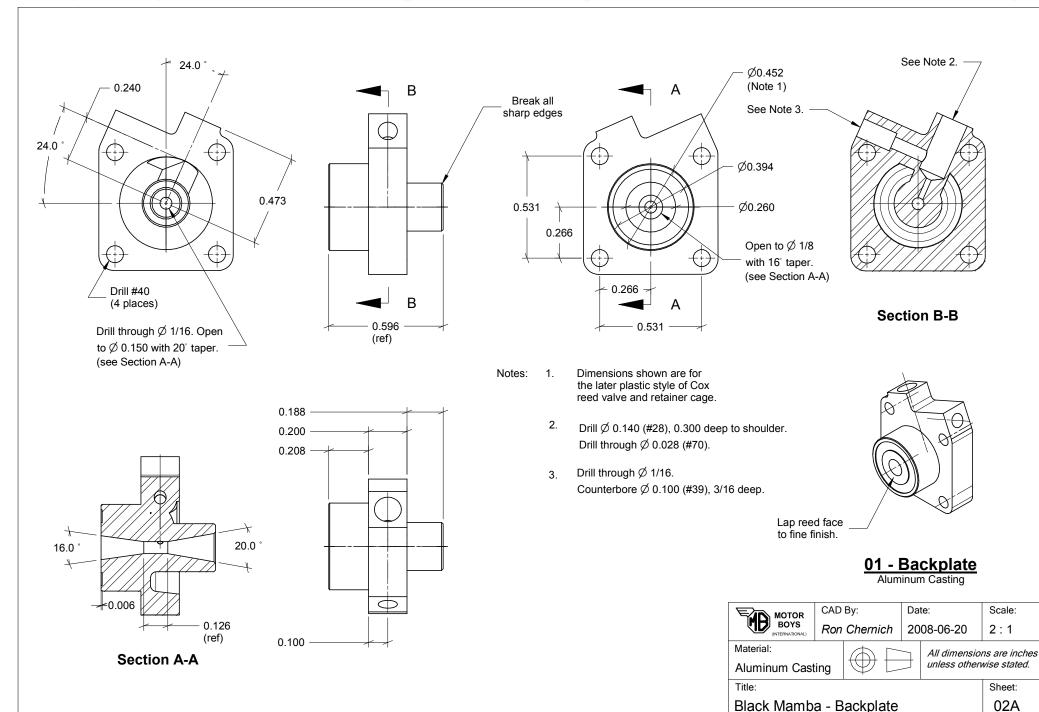


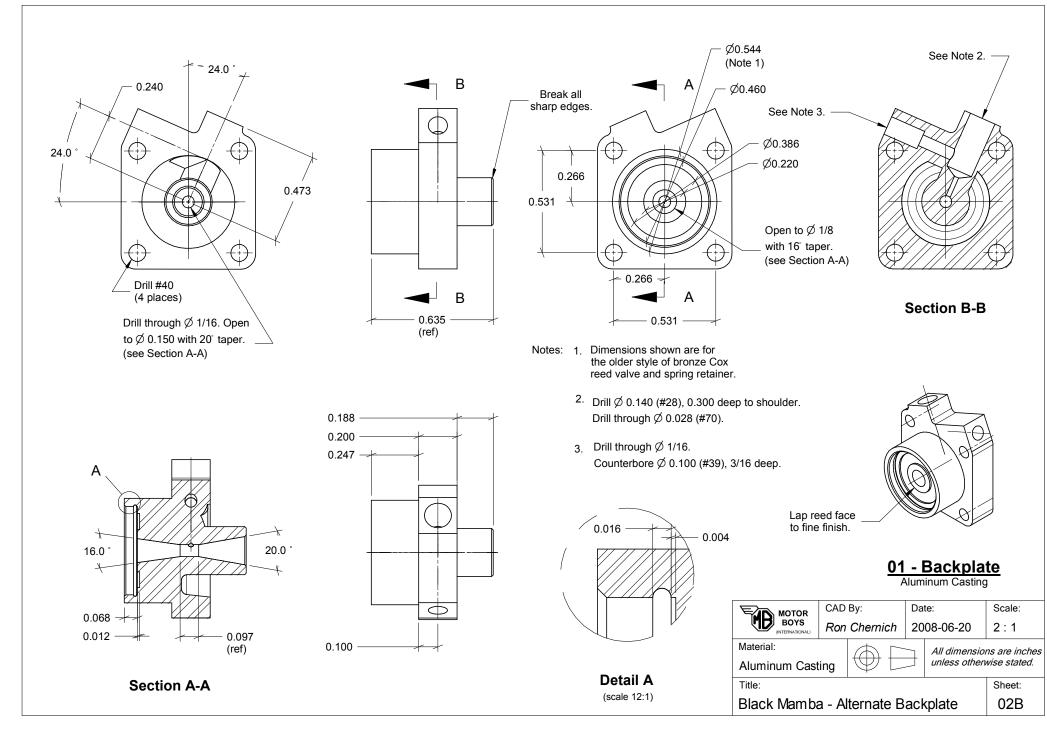


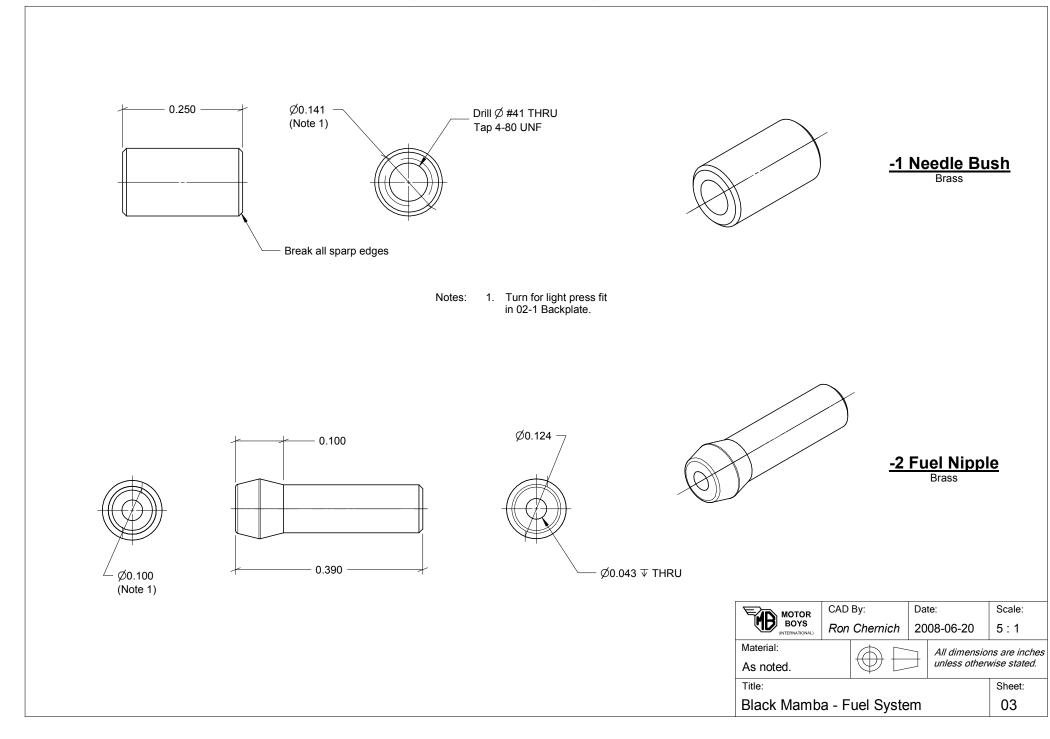


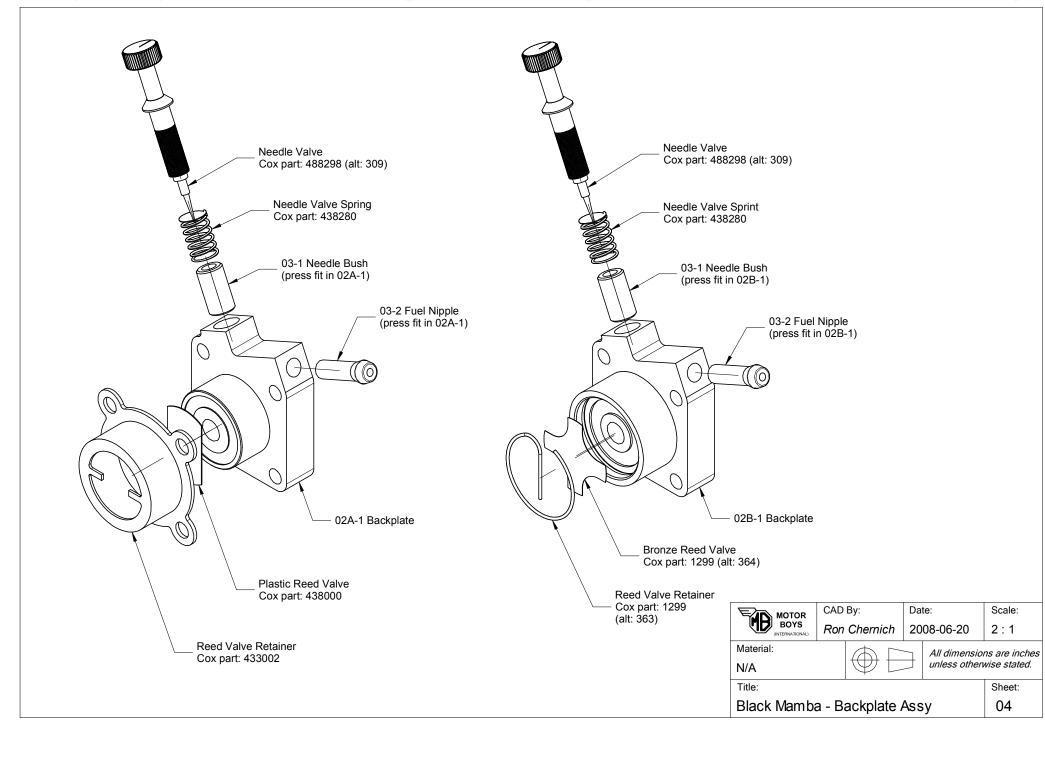
-1 Crankcase
Aluminum Casting

MOTOR	CAD By:		te:	Scale:
BOYS (INTERNATIONAL)	Ron Chernich	20	08-06-20	2:1
Material:	ns are inches			
Aluminum Cast	ing 🍑 🏻		unless other	wise stated.
Title:	Sheet:			
Black Mamb	01			

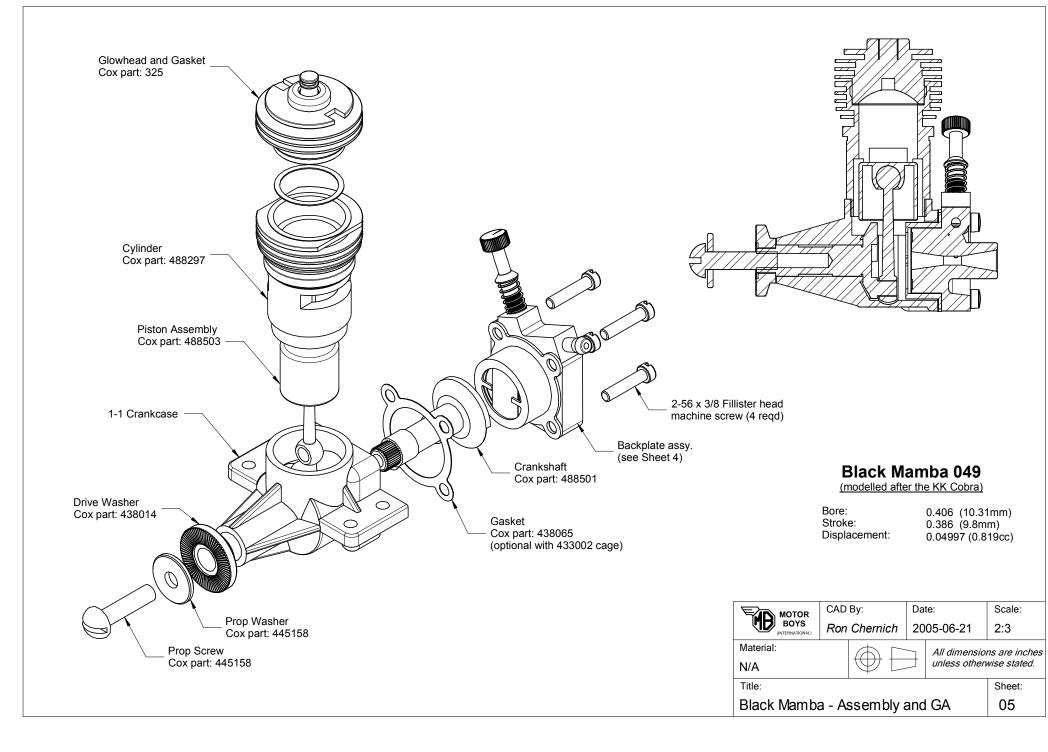




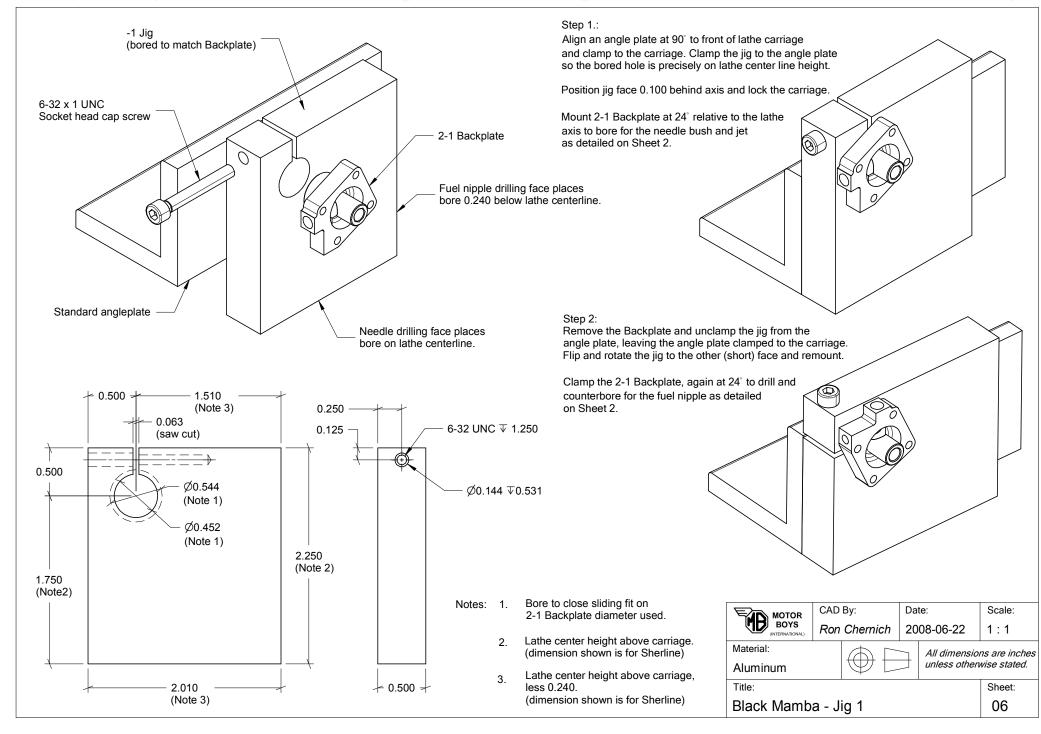




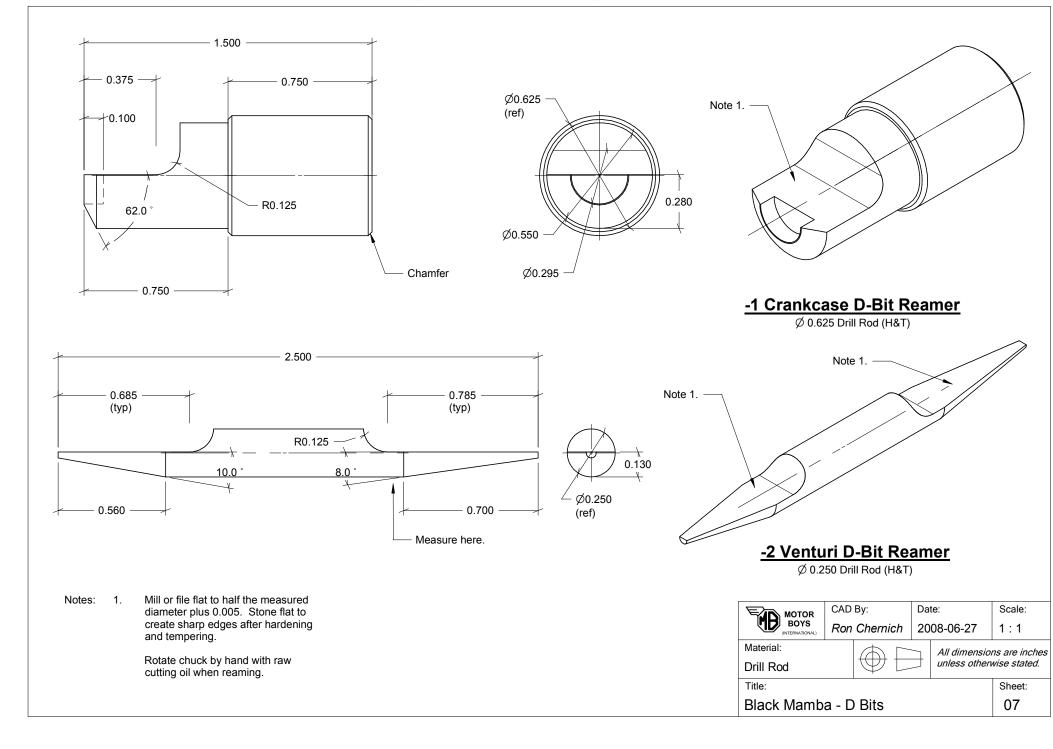
This plan is provided free of charge to Model Engine News Members without warranty



This plan is provided free of charge to Model Engine News Members without warranty



This plan is provided free of charge to Model Engine News Members without warranty

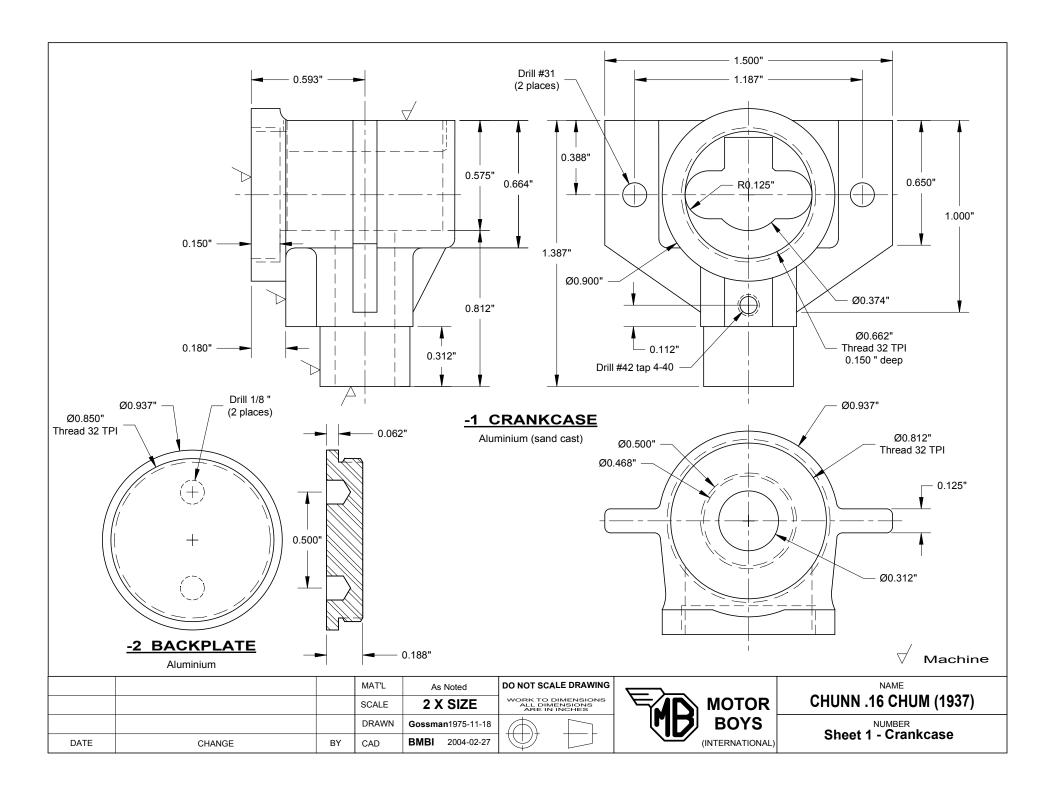


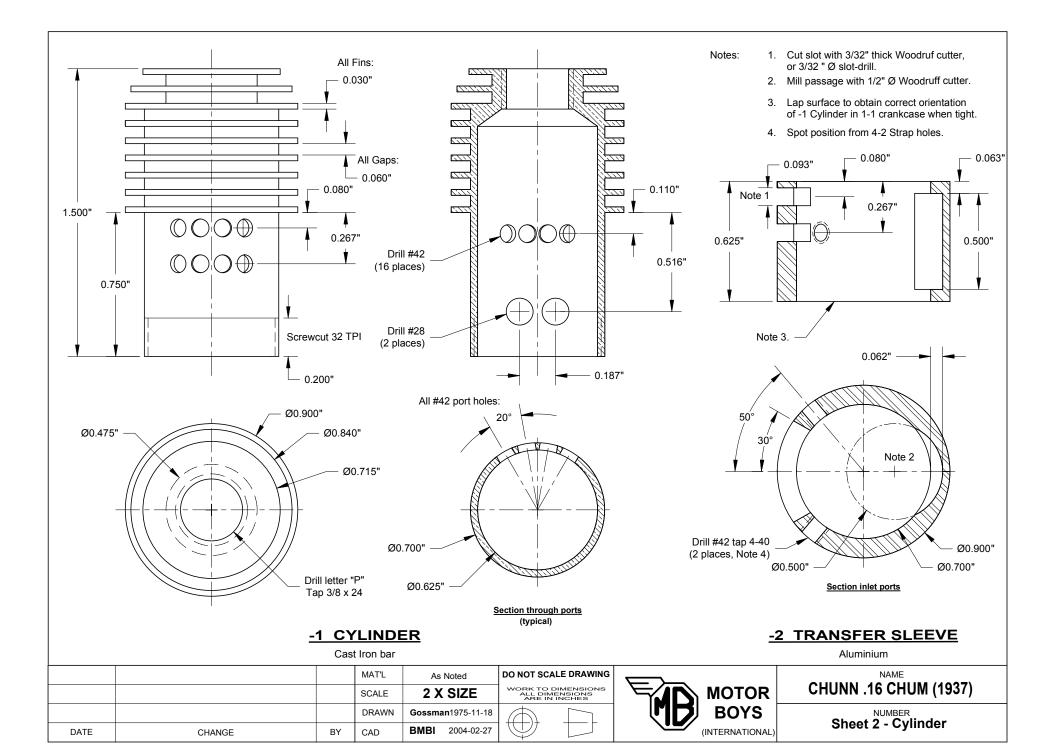
CHUNN "CHUM" 0.16 ci ignition engine

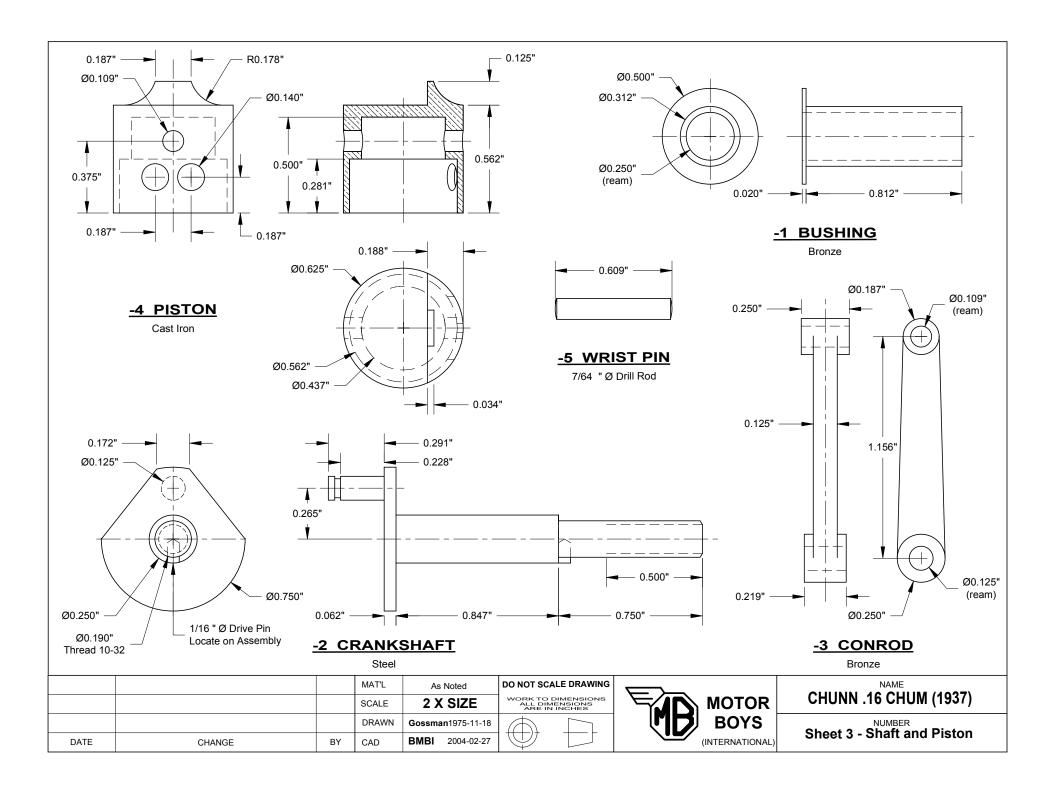


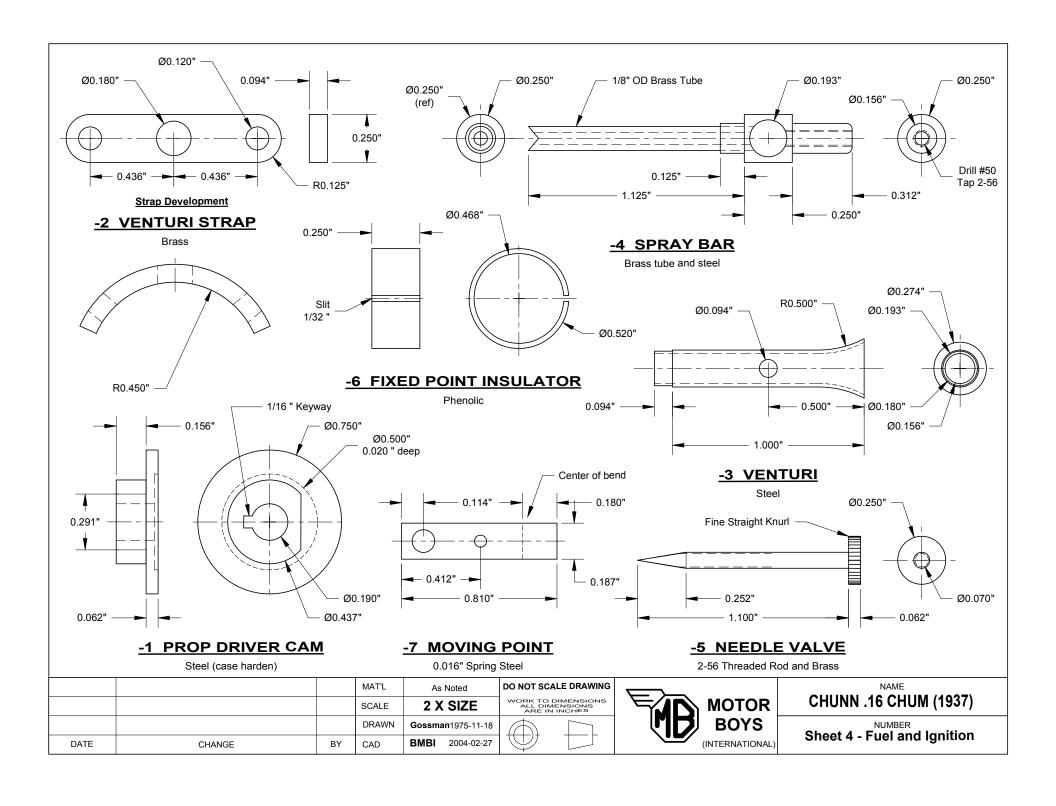
The Chunn "Chum" was designed by Bob Chunn and sold in 1937 by Southern Model Engineers of Nashville Tennessee. There were 2 versions of this design, differing in the way the timer points operated. It is believed that only around 150 engines in total were built. In recent times reproductions have been made both by amateurs and commercially. There also exists another Chunn-designed single cylinder engine of the same capacity known sometimes as the "Kaydet" or confusingly also as the "Chum" but which bears no similarity except for the capacity.

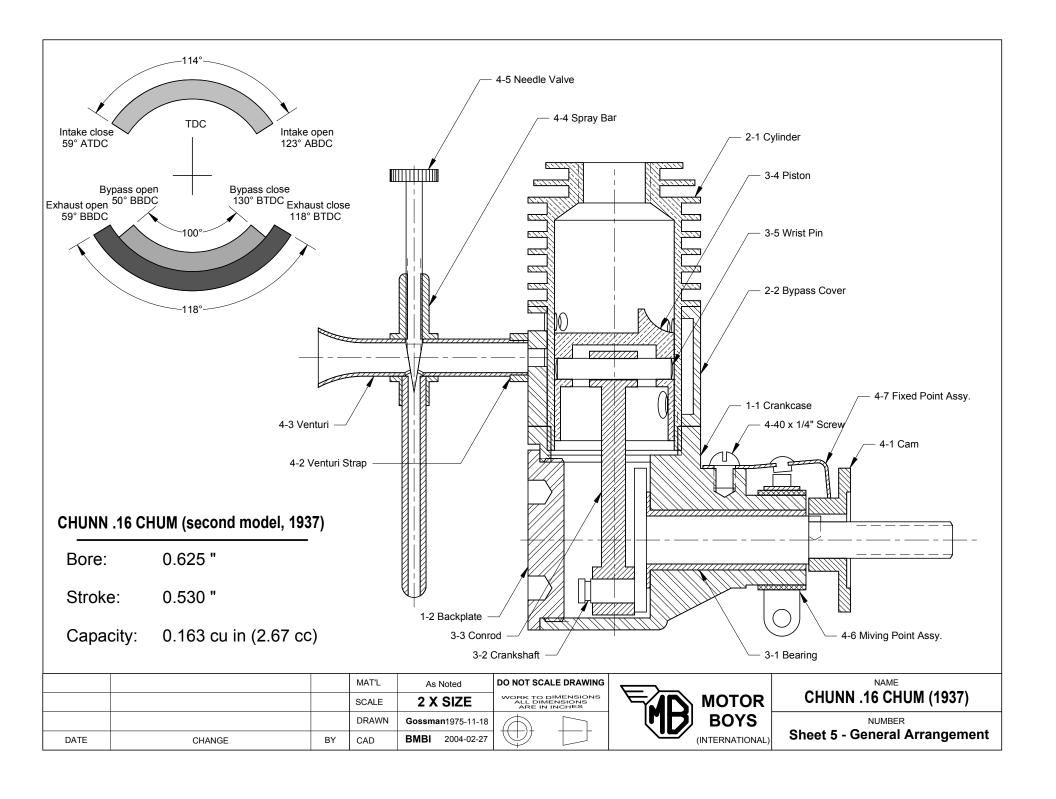
Bob Chunn was a barber by trade, but also a talented modeller with a love of machines. In 1937, believing that a market existed for small engines, Bob had started *Chunn Model Motors Incorporated* with capital invested by a member of one of Nashville's 'first families', Henry "Boots" Tyne. Located over the barbershop, Chunn Motors produced the "Chunn", and the "Chum". Economic circumstances forced a stockholders takeover of the company in 1938.









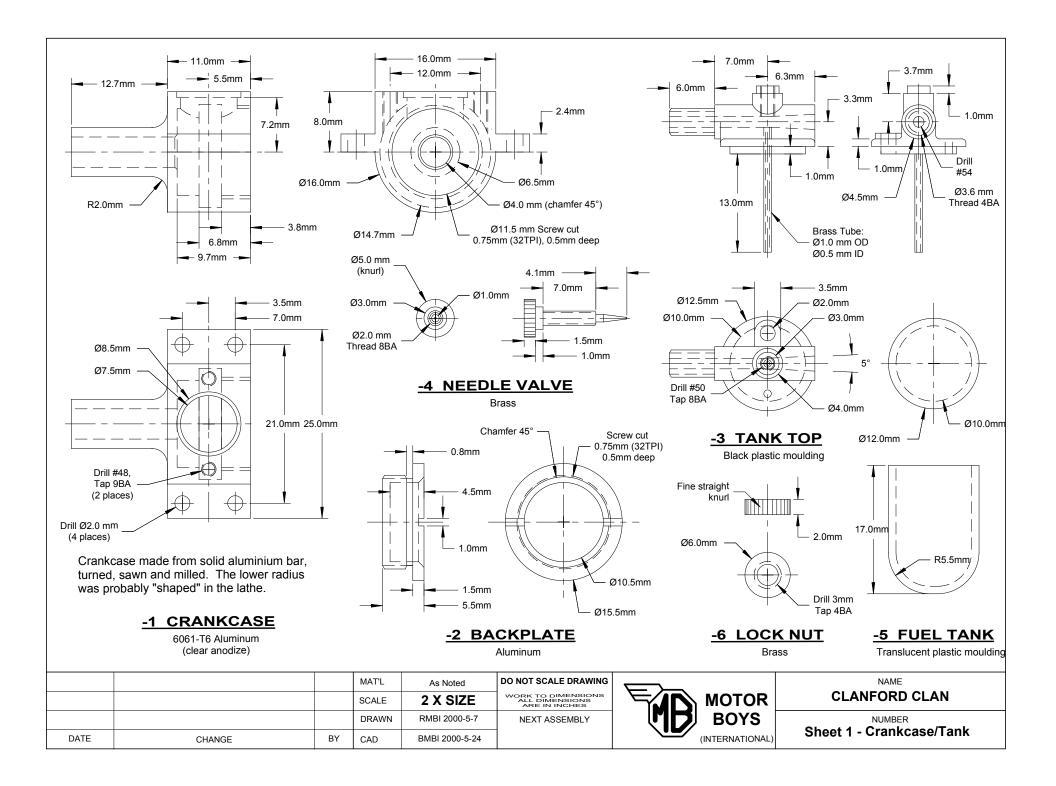


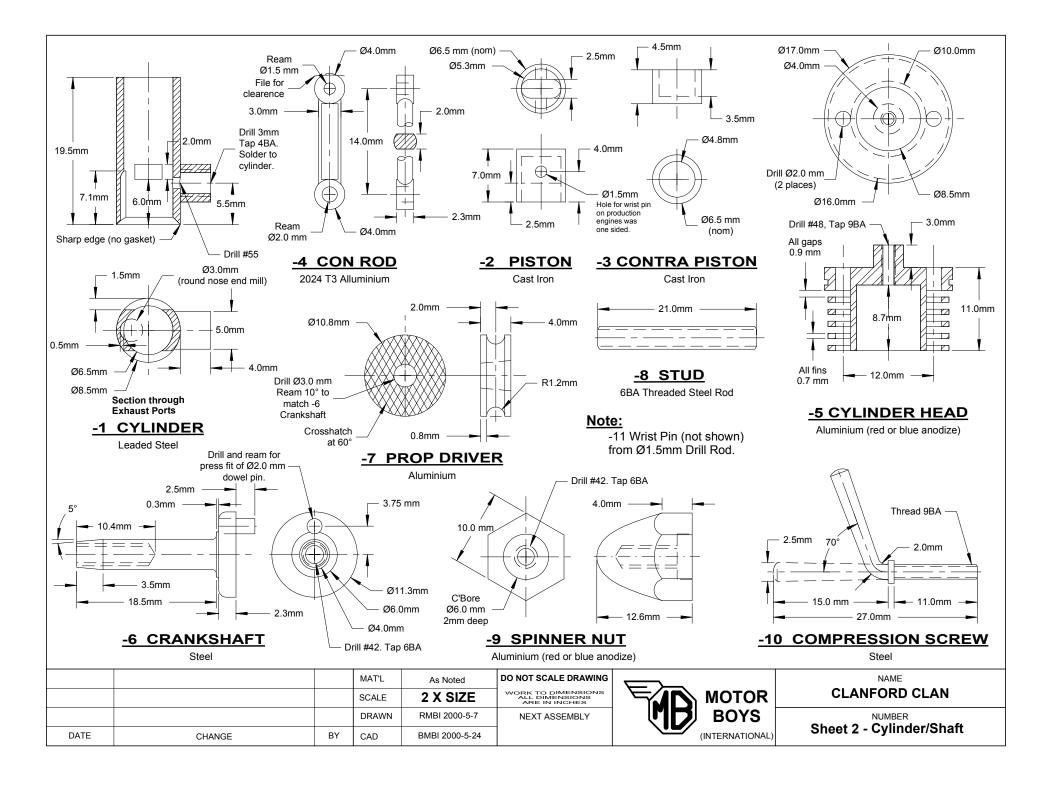
CLANFORD "CLAN" 0.24 cc

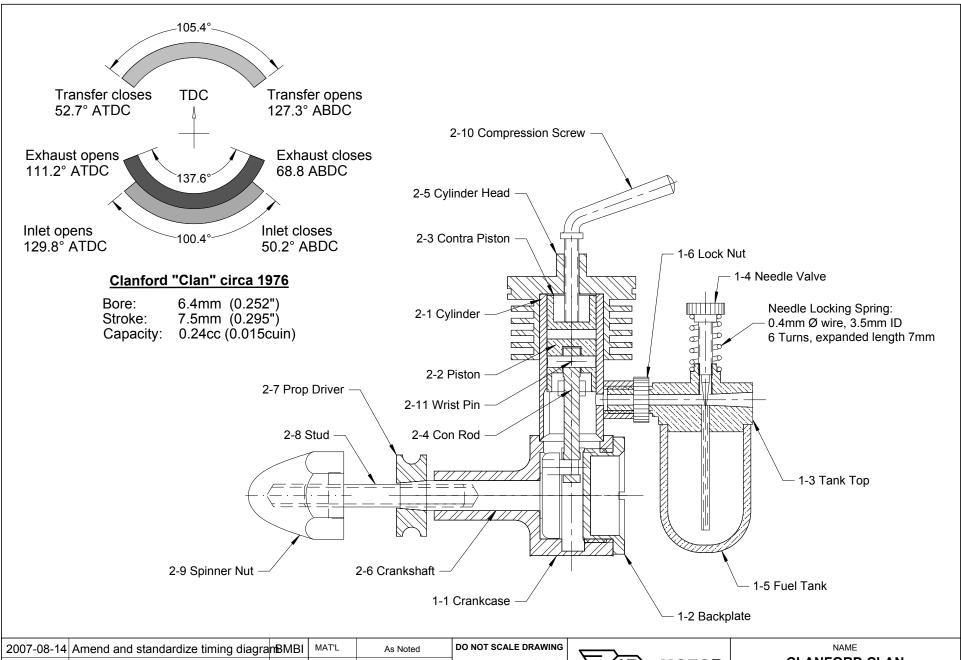


The *Clanford Clan* was a sub-miniature compression ignition engine manufactured briefly in England, circa 1976, under the direction of Mike Clanford, he of "A-Z" fame. It was a tiny side-port design featuring a barstock crankcase with a plastic injection moulded tanktop/venturi assembly, and came in a variety of colours. Tiny diesels are tricky beasts, both to make and to operate. With the Clan, this latter aspect was compounded by an occasional manufacturing defect which prevented transfer, so if you had one and could not get it to run, it may not have been your fault!

However, as it appeared to possess an elegant if deceptive simplicity, we drew a set of Motor Boys Plans for it way back in the dying days of the last century. What with one thing and another, none of The Boys ever got around to building one from the plan.







2007-08-14	Amend and standardize timing diagra	mBMBI	MAT'L	As Noted	DO NOT SCALE DRAWING
			SCALE	2 X SIZE	WORK TO DIMENSIONS ALL DIMENSIONS ARE IN INCHES
			DRAWN	RMBI 2000-05-07	NEXT ASSEMBLY
DATE	CHANGE	BY	CAD	BMBI 2000-05-24	



CLANFORD CLAN

NUMBER

Sheet 3 - General Arrangement

ETW CYGNET ROYAL steam engine

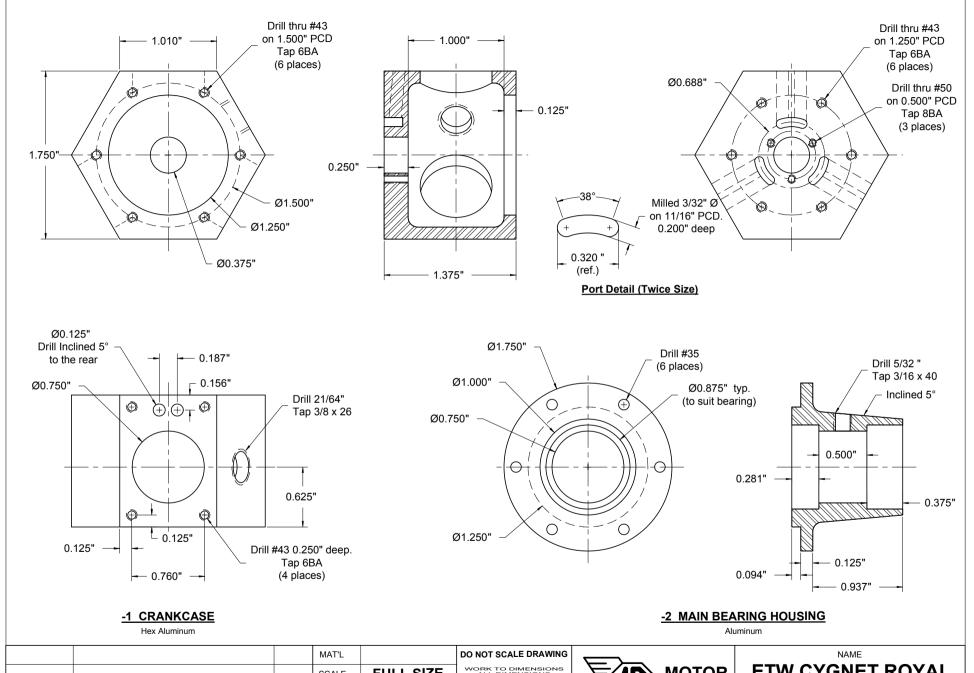


There can be no doubt that Edgar T Westbury (1896-1970) was a true, but unassuming, giant of the model engineering fraternity. Designing and building over 60 unique IC and steam engines, one wonders how he also found time to edit bi-weekly issues of the Model Engineer magazine for almost 20 years!

Westbury's Cygnet Royal, a 3 cylinder radial steam engine was conceived in 1962 as an experimental crossover between steam and IC build techniques. It was designed as a marine engine for use behind a flash steam generator, withstanding high pressure (80psi and upwards) and running at high speed (typically 3,000rpm +). In many ways, with its in-line orbital distribution valve, it behaves as a 2 stroke IC engine but running much more smoothly. The single throw crankshaft runs on ball bearings within an oil filled crankcase.

As well as being a elegant curiosity, the Cygnet Royal is a good deal lighter and more compact than conventional steam engines of a similar output. Measuring around 4" x 4" x 4", the engine has a bore x stroke of 5/8" dia x ½". Having 3 cylinders, the Cygnet Royal is also a self-starting engine - just add steam (or compressed air) and off it goes!

Castings are available from *Hemingway Kits* in the UK, from whom all of this text was plagiarised.

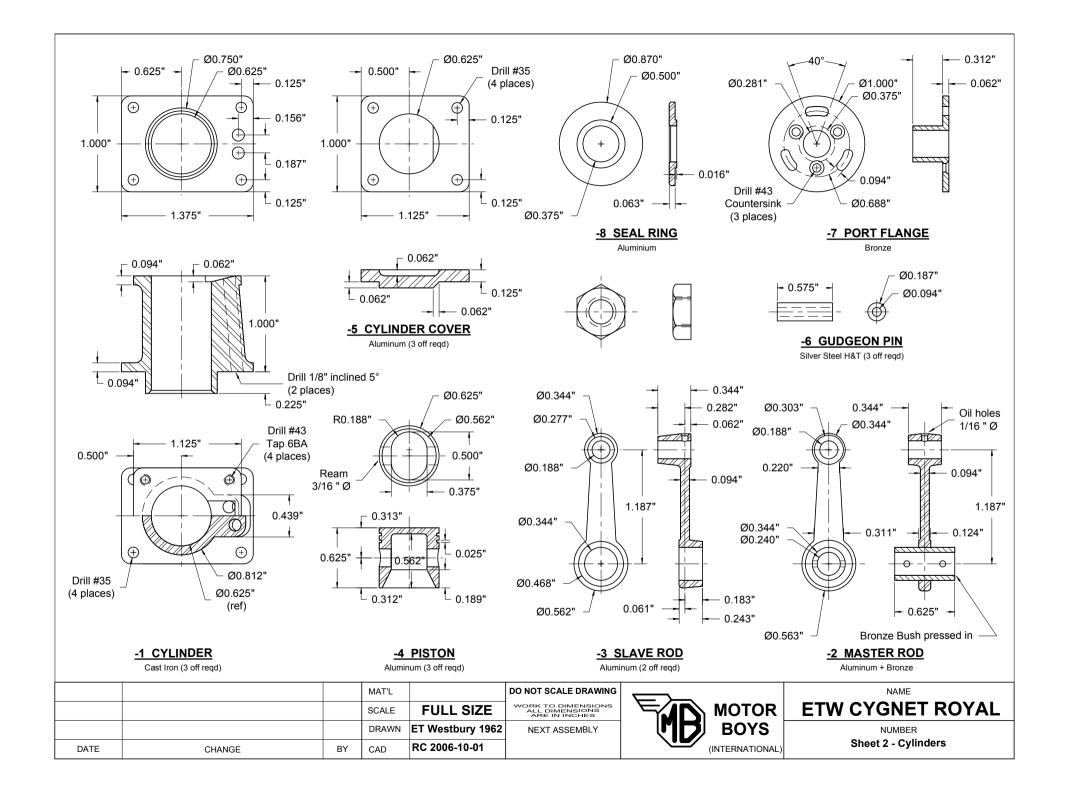


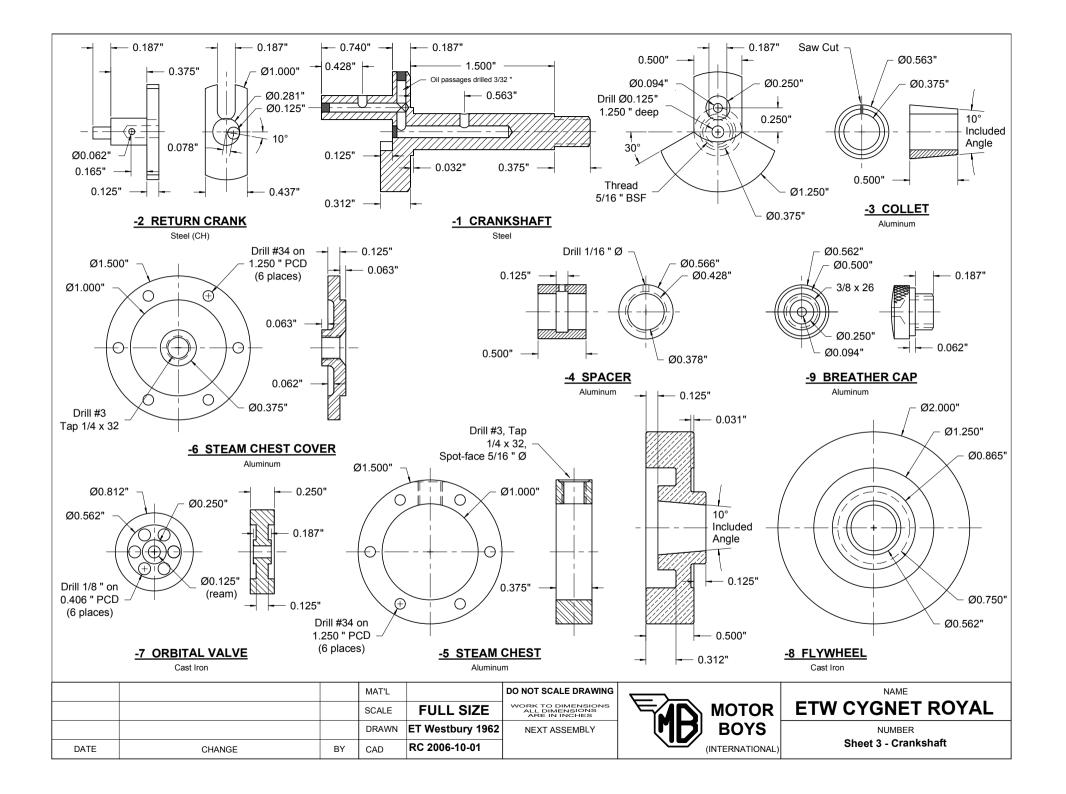
			MAT'L		DO NOT SCALE DRAWING
			SCALE	FULL SIZE	WORK TO DIMENSIONS ALL DIMENSIONS ARE IN INCHES
			DRAWN	ET Westbury 1962	NEXT ASSEMBLY
DATE	CHANGE	BY	CAD	RC 2006-10-01	



ETW CYGNET ROYAL

NUMBER Sheet 1 - Crankcase

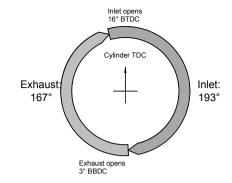


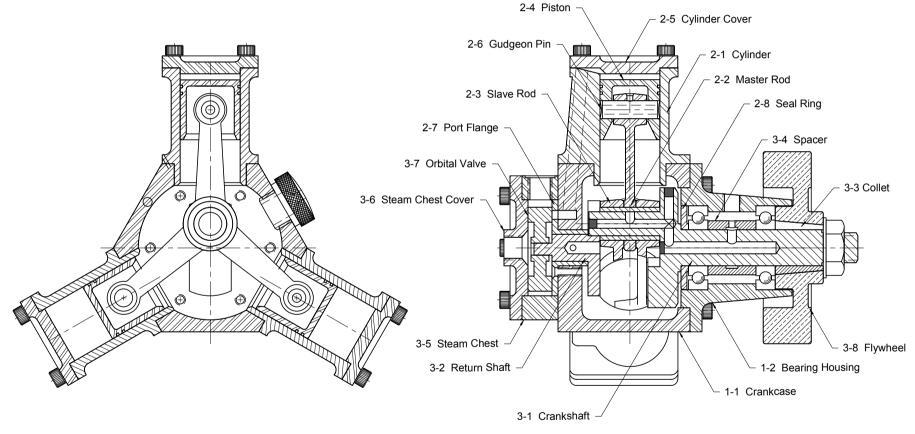


ETW CYGNET ROYAL

Bore: 0.625 " (15.88 mm)

Stroke: 0.500 " (12.7 mm)





			MAT'L		DO NOT SCALE DRAWING
			SCALE	FULL SIZE	WORK TO DIMENSIONS ALL DIMENSIONS ARE IN INCHES
			DRAWN	ET Westbury 1962	NEXT ASSEMBLY
DATE	CHANGE	BY	CAD	RC 2006-10-01	



ETW CYGNET ROYAL

NUMBER

Sheet 4 - Genreal Arrangement

David Anderson SATELLITT 1cc



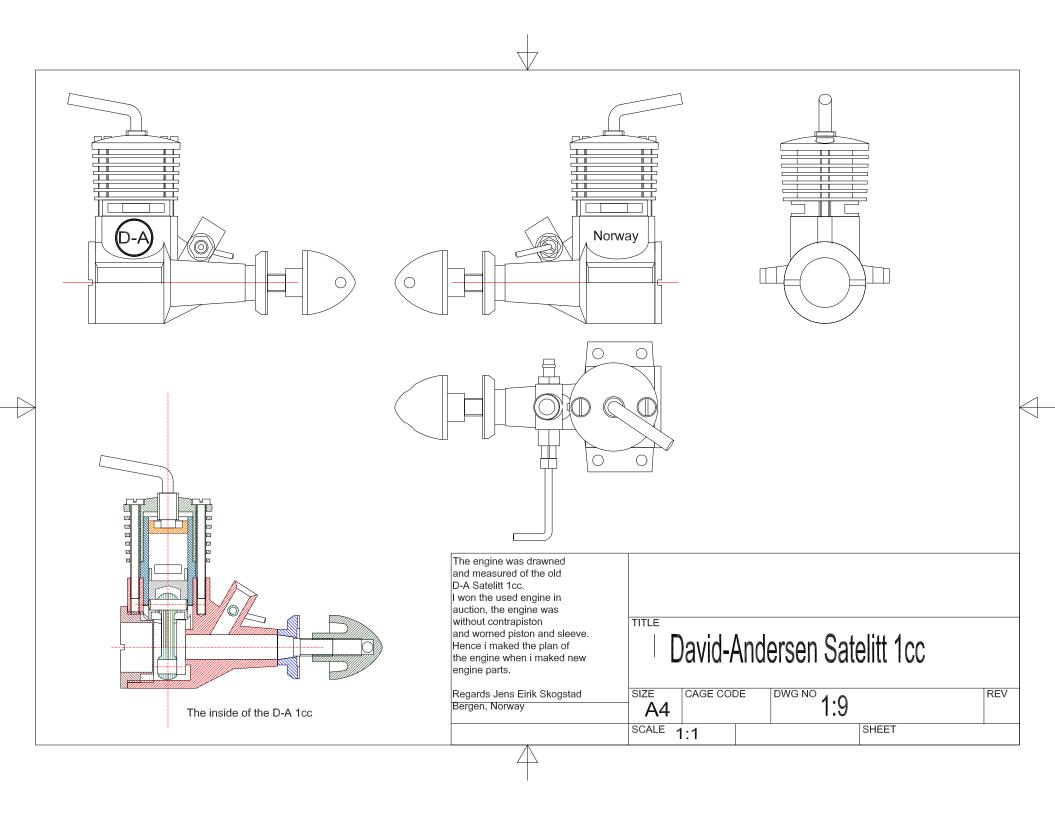
Jan David-Andersen was making model aircraft engines from 1950 to 1964.

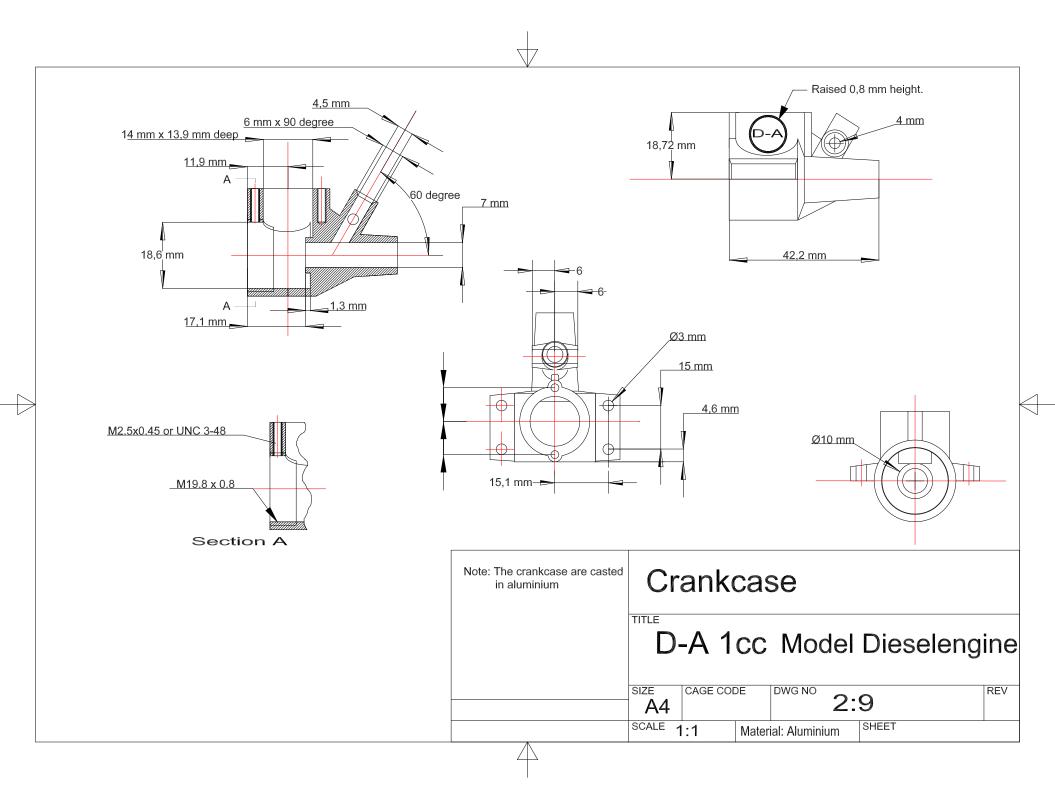
DA 1 cc was the second type of engine developed by David-Andersen. It came in 1954 and was a typical engine of its time. The cylinder with cooling fins and no separate cylinder head, was screwed into the crankcase, keeping the cylinder and the crankcase together. The construction was not entirely successful. The workshop did not have good quality equipment to make the threads. The users of the engines were often brutal when removing the cylinder. Many engines were damaged during disassembly.

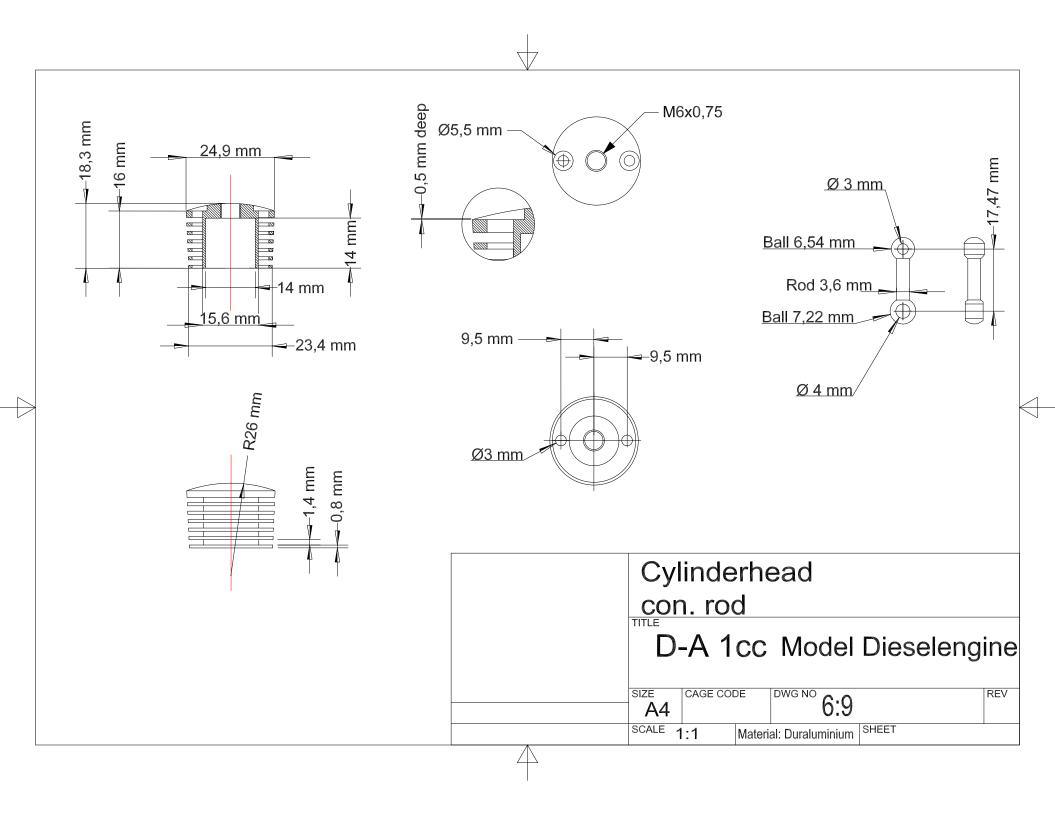
To cure the problems with version 1, the engine was modified. It was constructed with new cooling fins which were fastened with two screws. The crankcase was modified with lugs for the screws. The cylinder was also modified. In some manuals a drawing of this engine is mention as "Satellitt" and this is the version presented in the image above and in the plans that follow.

David Andersen Satelitt 1cc

Measured and drawned by Jens Eirik Skogstad, Bergen, Norway.





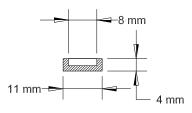


Cylinder Material: High tensile steel or cast iron (original: Cast iron) R1,25 mm-7,6 mm wide exhaustport _1,7 mm 35 mm dia, sawmill and 2,5mm height 4,54 mm 2,5 mm height 10,29 mm deep with 2,5 mm pinmill Ø11 mm Ø4 mm Ø14 mm 25 mm∞

Ø19,1 mm

Contrapiston

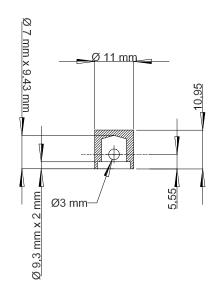
Material: Cast iron



Note: The contrapiston was lost in my used engine and maked own contrapiston. Original design and measure of the contrapiston unknown.



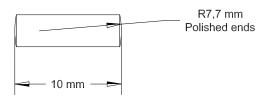
Material: Cast iron

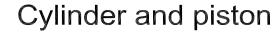


Wristpin

Material: 3 mm dia. Silver steel

Scale: 3:1





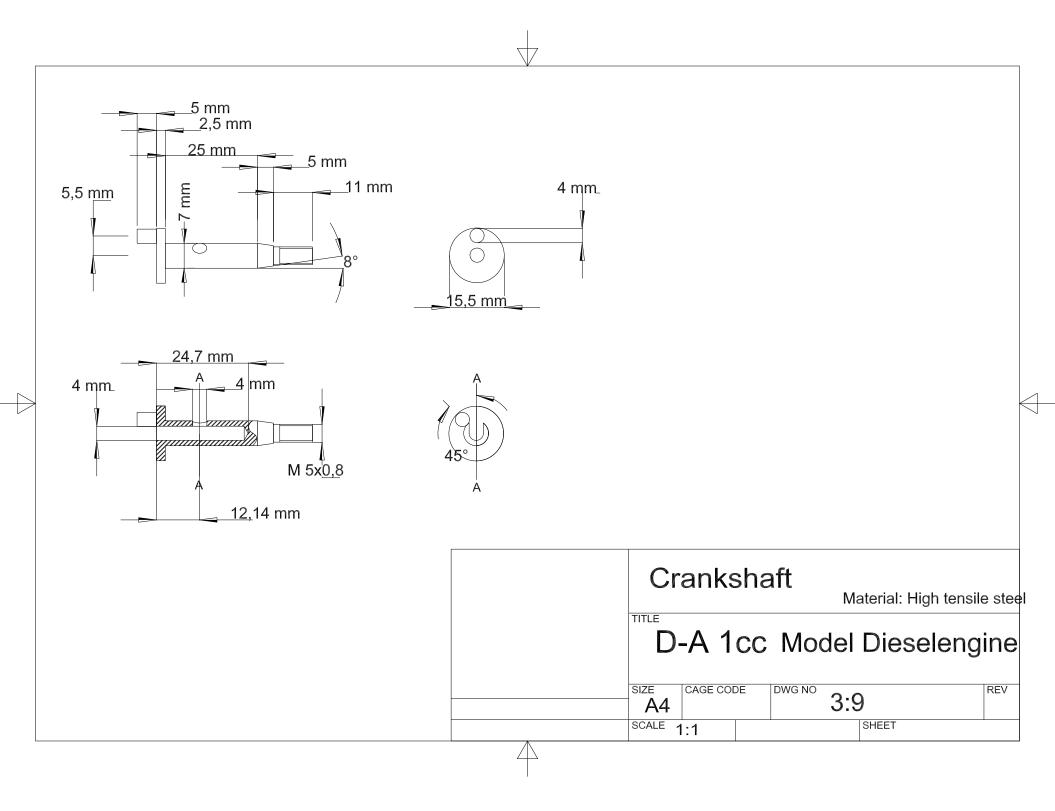
TITLE

D-A 1cc Model Dieselengine

SIZE A4	CAGE COL	DΕ	DWG NO	4:9		REV
SCALE 1	:1/3:1				SHEET	

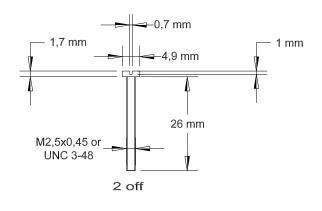
4

9 mm

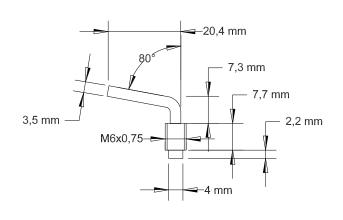


Screws for cylinderhead. Material: Steel

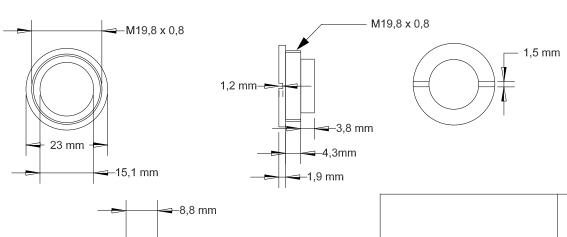
Compressionscrew. Material: Steel



14 mm



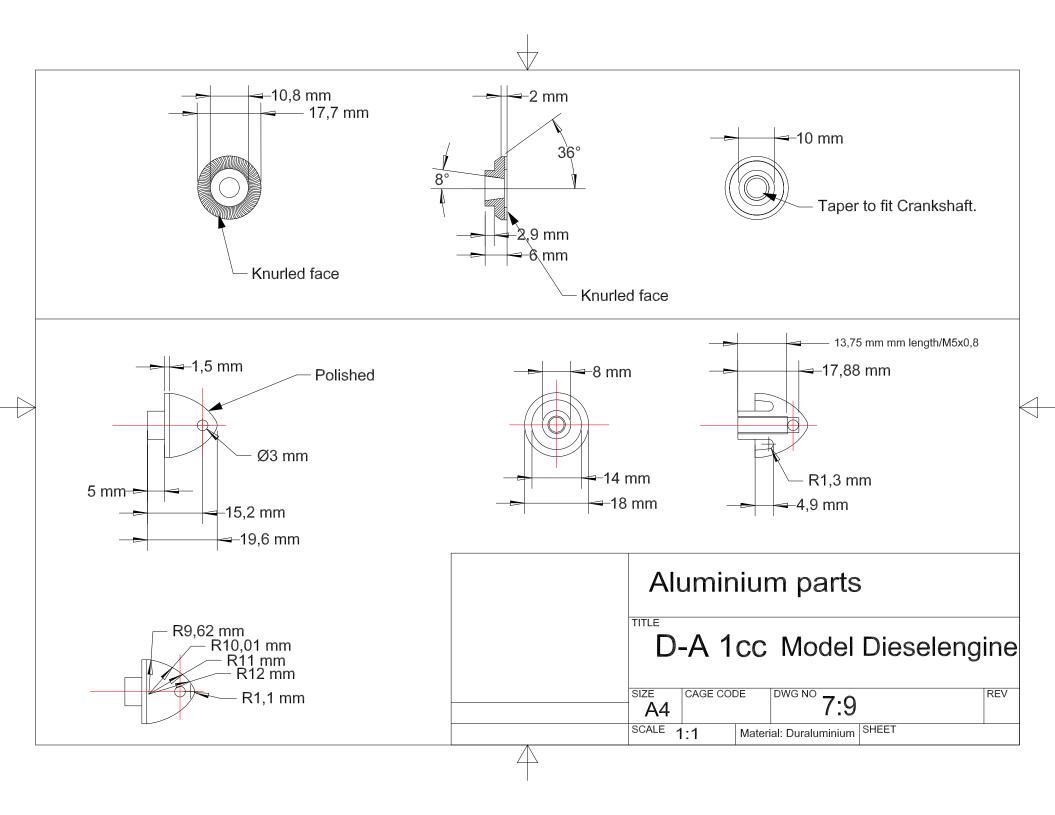
Backcover. Material: Duraluminium

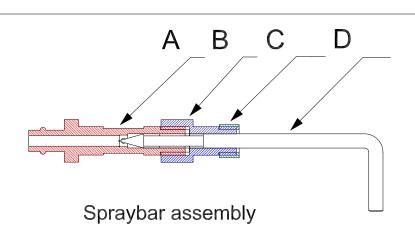


TITLE

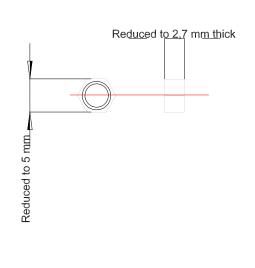
D-A 1cc Model Dieselengine

SIZE A4	CAGE COI	DE	DWG NO	5:9)	REV
SCALE 1	:1				SHEET	

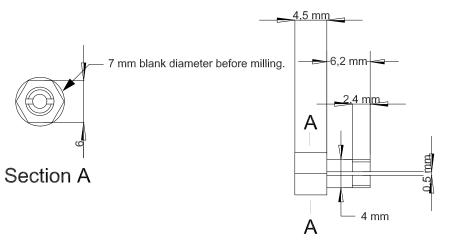


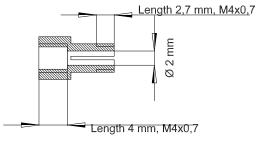






B Nut with lock Material: Brass





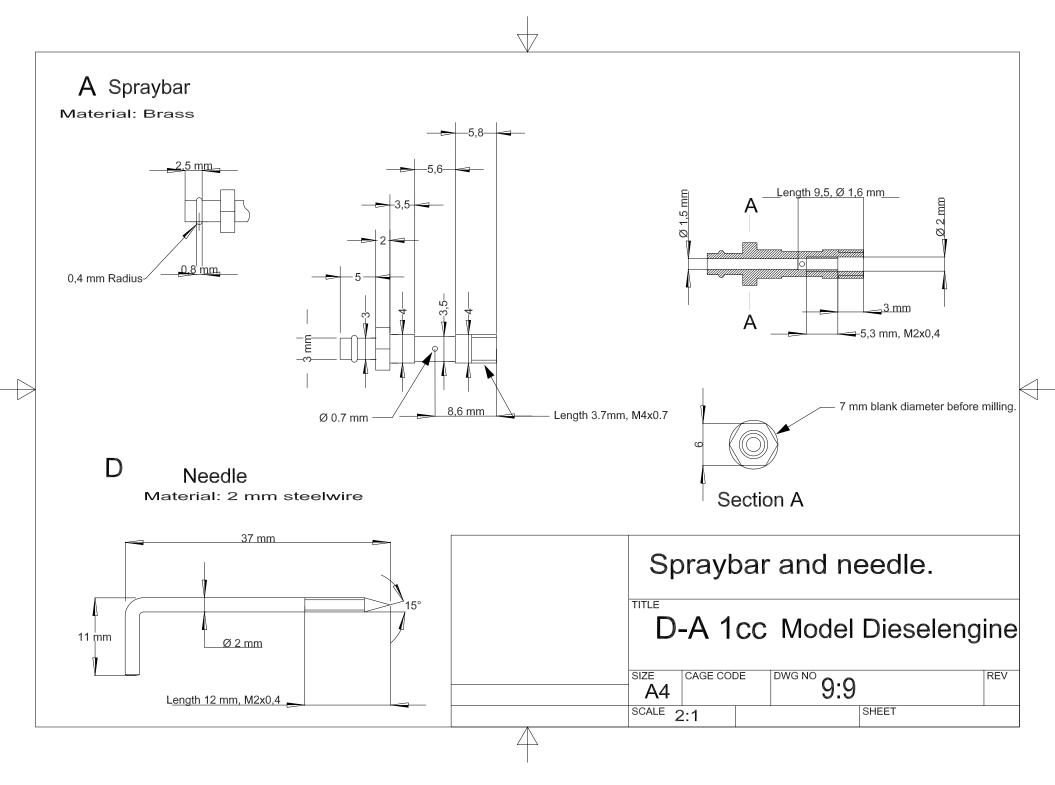
Nutlock and nut with lock.

TITLE

D-A 1cc Model Dieselengine

SIZE A4	CAGE COL	DE	DWG NO 8:9		REV
SCALE 2	2:1			SHEET	





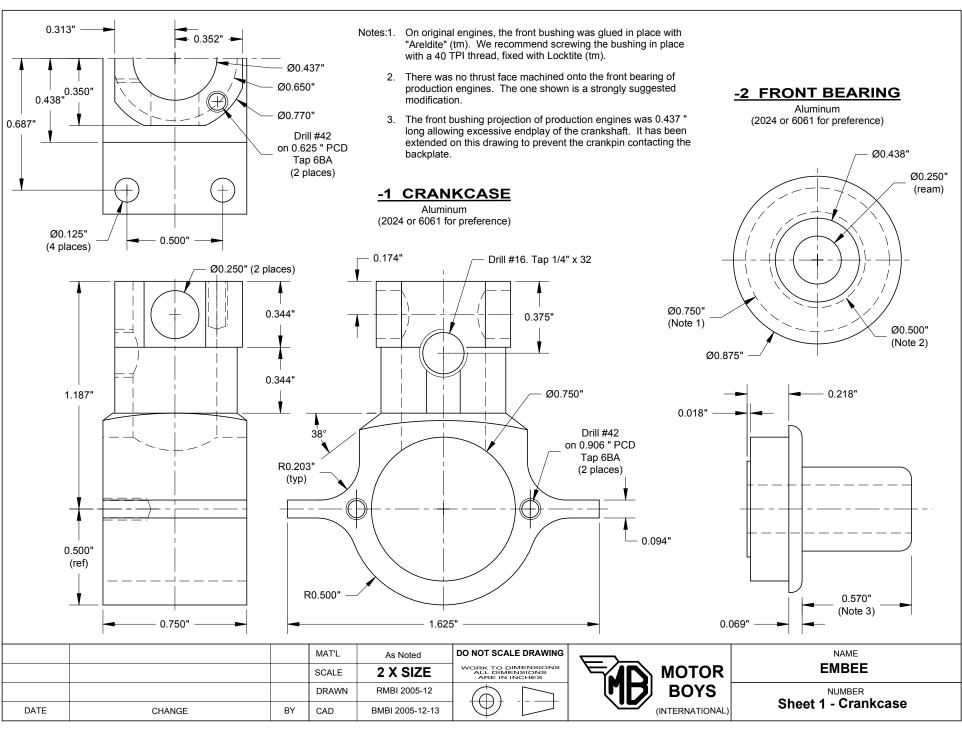
EMBEE 0.75cc diesel

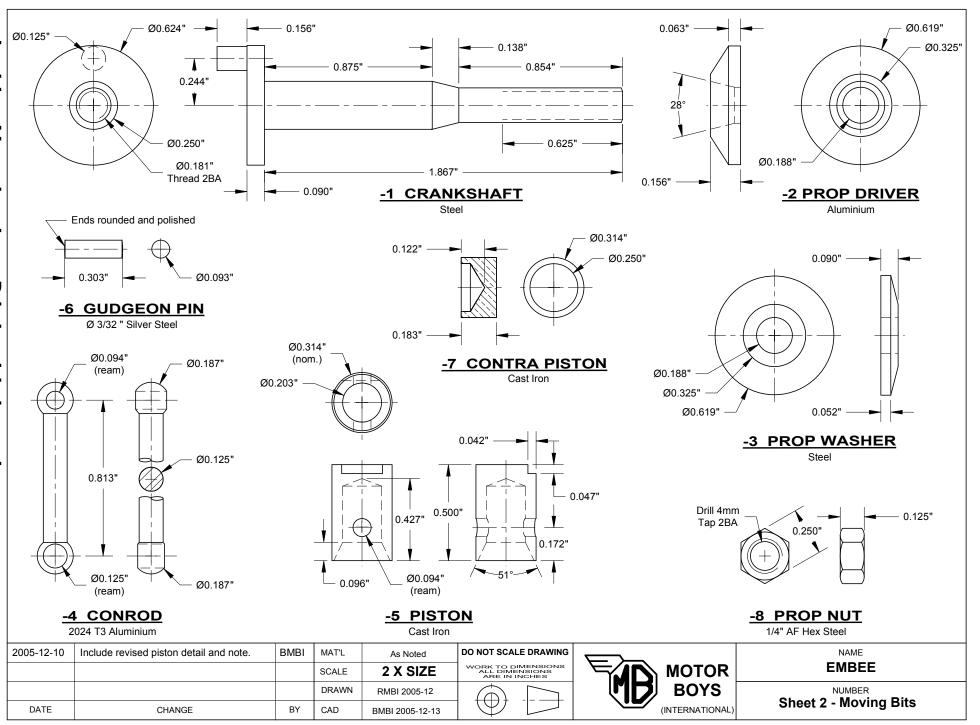


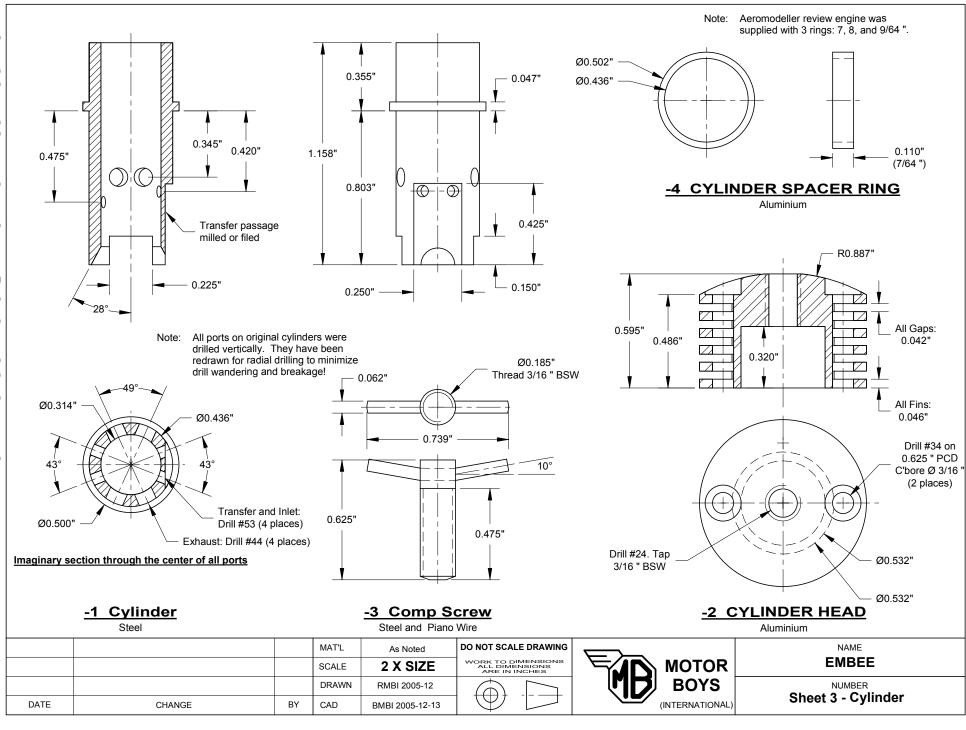
The EMBEE was made in Leicester by Moore and Bailey. It is a barstock engine, and quite nicely made and finished, inside and out. Sadly in the hand, in my view, it is an ugly lump.

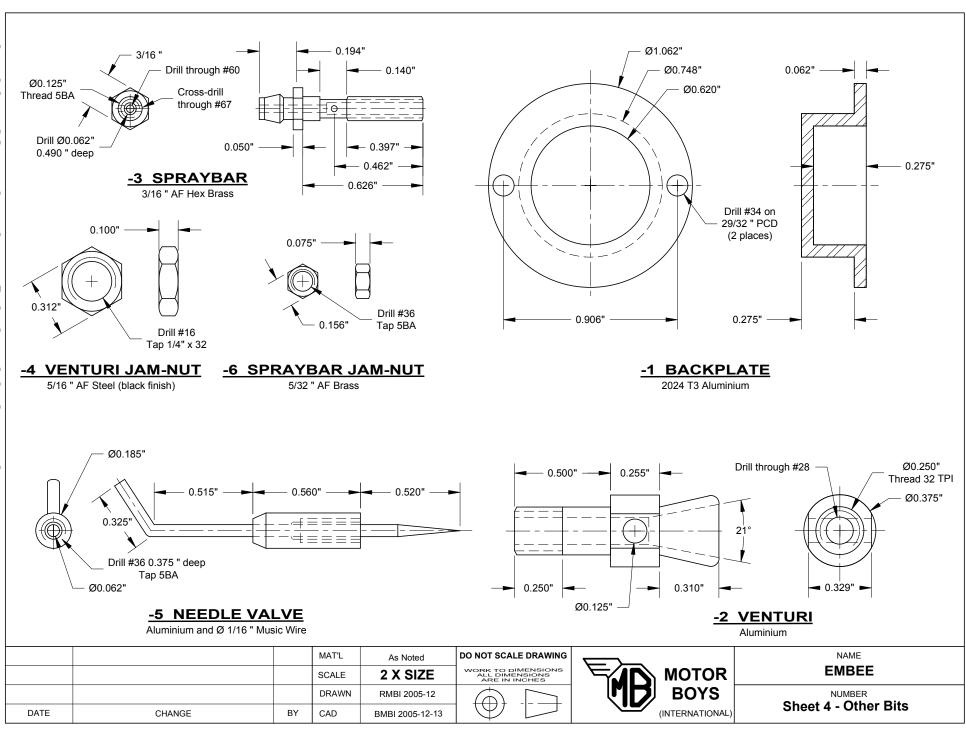
The "EmBee 75" (the maker's initials) was a nicely made little engine. The crankcase was machined from barstock with the front shaft housing glued into the main case section with Araldite (a well known English two part epoxy). The finish was excellent and the engines were well-behaved and easy to start. Peter Chinn suggested that it "[would] fill a long felt want for a Mills .75 replacement engine". I am unable to locate any advertising for the EmBee, but Clanford's A-Z, not always the most reliable reference, indicates that production spanned the period 1968 through 1970.

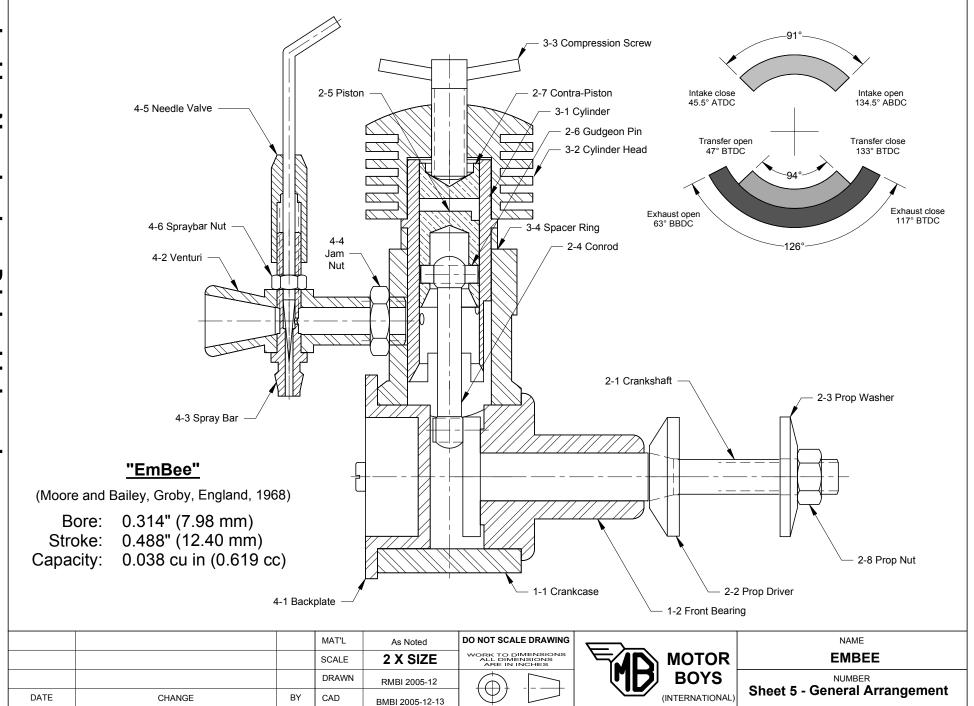
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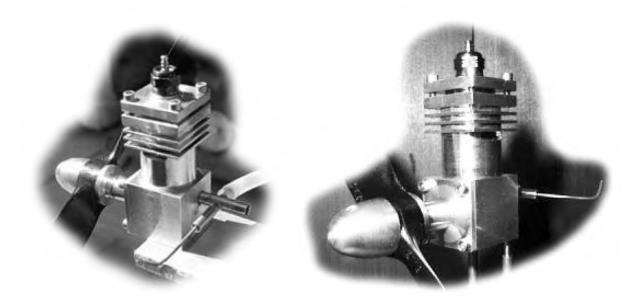








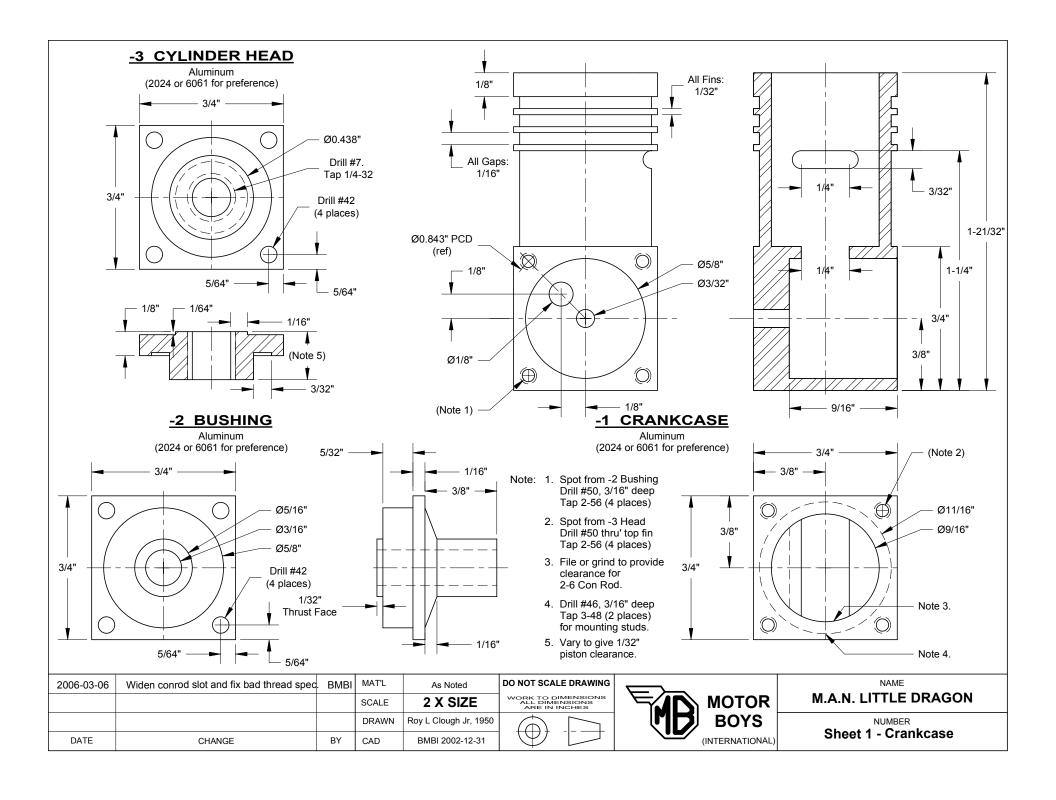
M A N LITTLE DRAGON glow plug engine

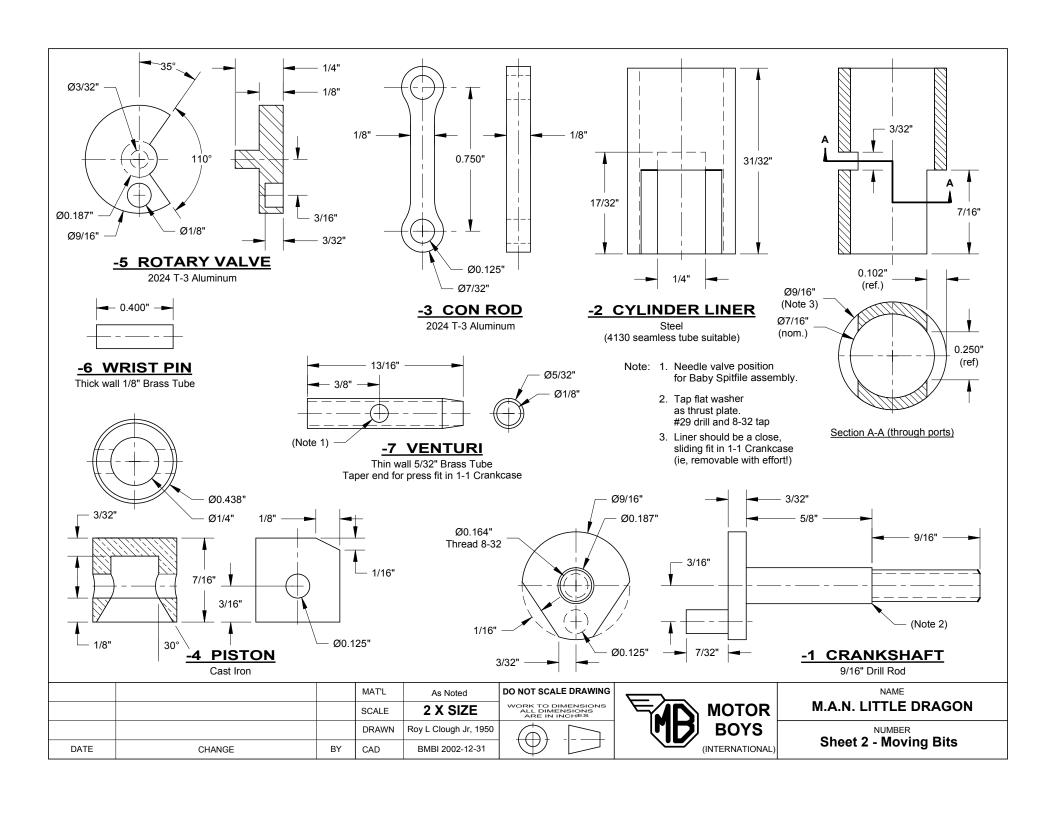


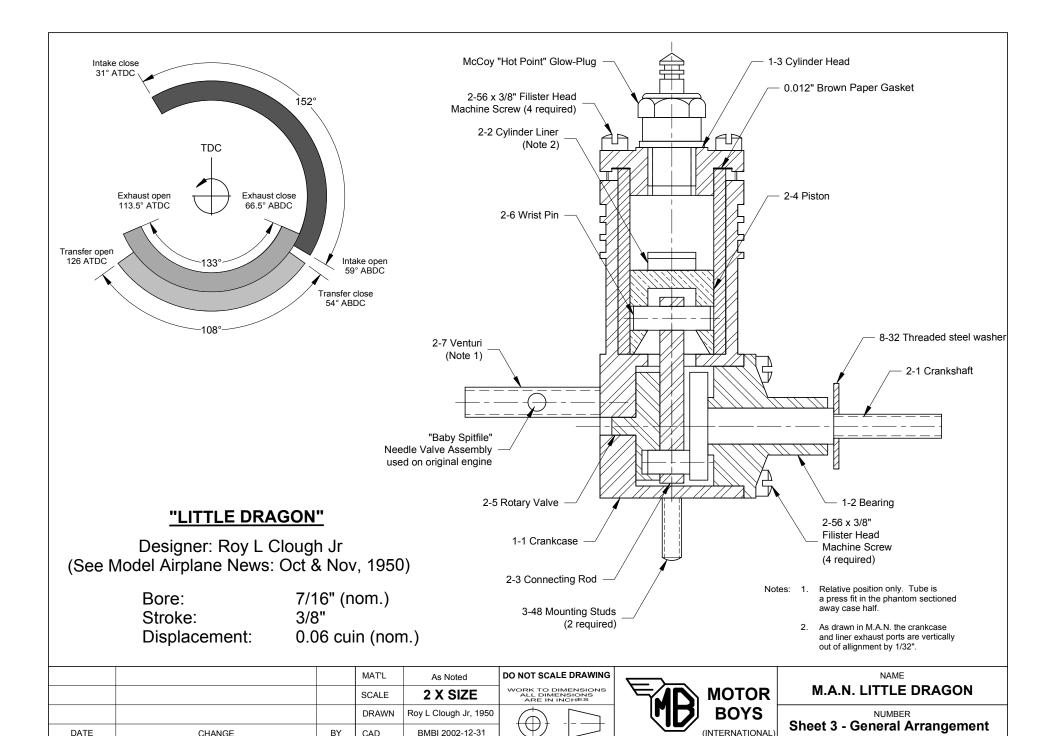
In 1950, the magazine **Model Airplane News** published a two part article describing a simple 0.06 cu in engine for home construction called the *Little Dragon*. The designer and author was Roy Clough Jr. Roy appears to have been the man called on when something out of the ordinary was required; engines, free-flight helicopters and ducted-fan designs, Roy did them all. His concept for the project was that it should be:

"..a project any amateur machinist can tackle with full confidence of good results. It does not require any special tools, special talents, or extreme precision. A large part of the total time spent in developing the design was devoted to eliminating awkward machining jobs, delicate operations, and tricky assemblies. If the reader owns a small lathe and can centre a piece of stock with 1/64", he need have no qualms about being able to turn out the job."

[Apologies for poor photographs. These are the best I could find as despite it's simplicity the engine does not seem to have had many builders.]







DATE

CHANGE

BY

CAD

MICRON 5CC fixed compression diesel

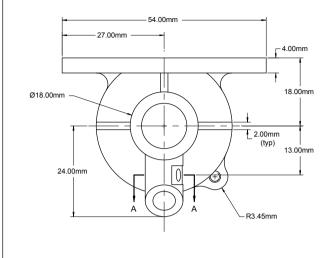


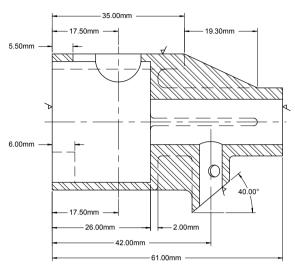
This is the big, classic, French manufactured Micron 5cc introduced in 1946. It was a highly successful contest engine in that year.

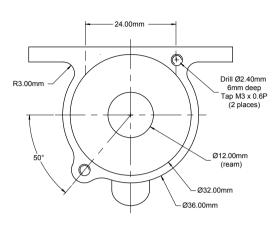
This fixed compression 5cc engine was available in two variants for upright or inverted operation.

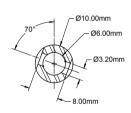
A feature worthy of note is the spring thing on the tank. This is a fuel cutout. It is resting against an internally spring loaded plunger that will seal off the fuel supply from the tank. The plunger is pulled up until the external spring clicks into a detent, thus keeping the fuel supply open. A tug on the spring arm from a timer releases the plunger, cutting off the supply.

Note that there exists a British engine of the same period, the 5cc fixed compression *Owat* that looks exactly like a carbon copy of this Micron, with which it is easily confused. The Owat externally is said to be more poorly finished that the Micron. So buyer beware!

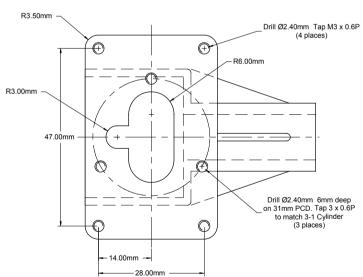








Section "A - A"



-1 CRANKCASE

Aluminum sand casting

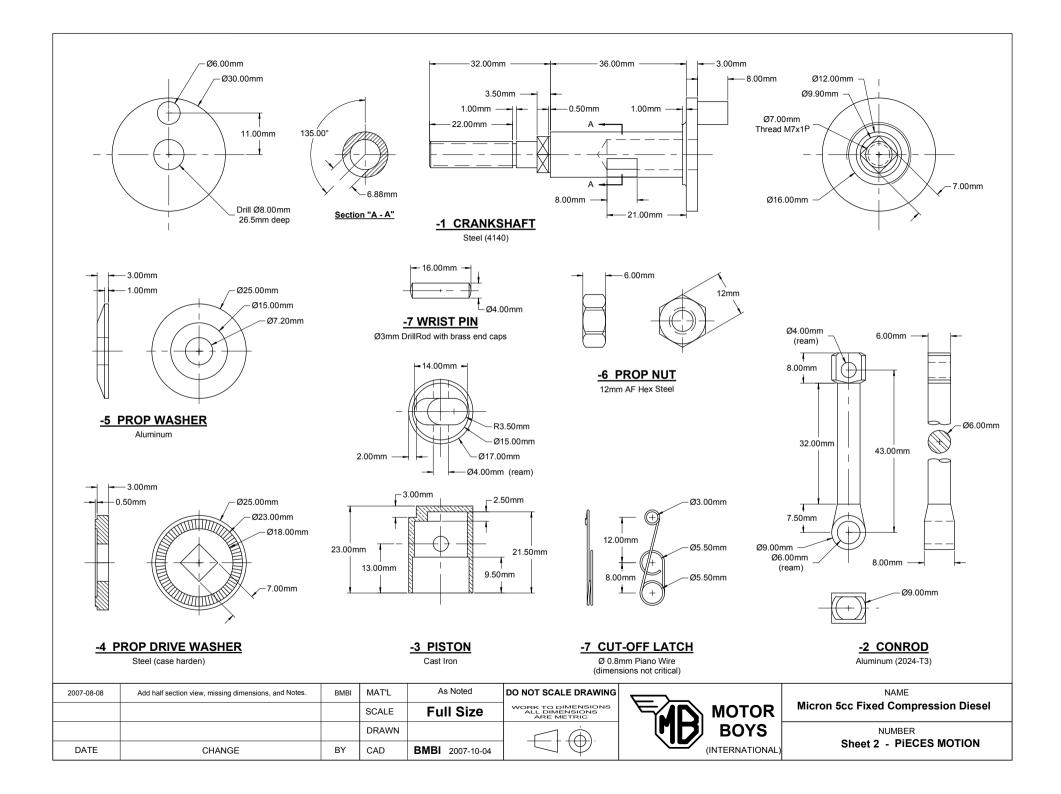
√ Machine

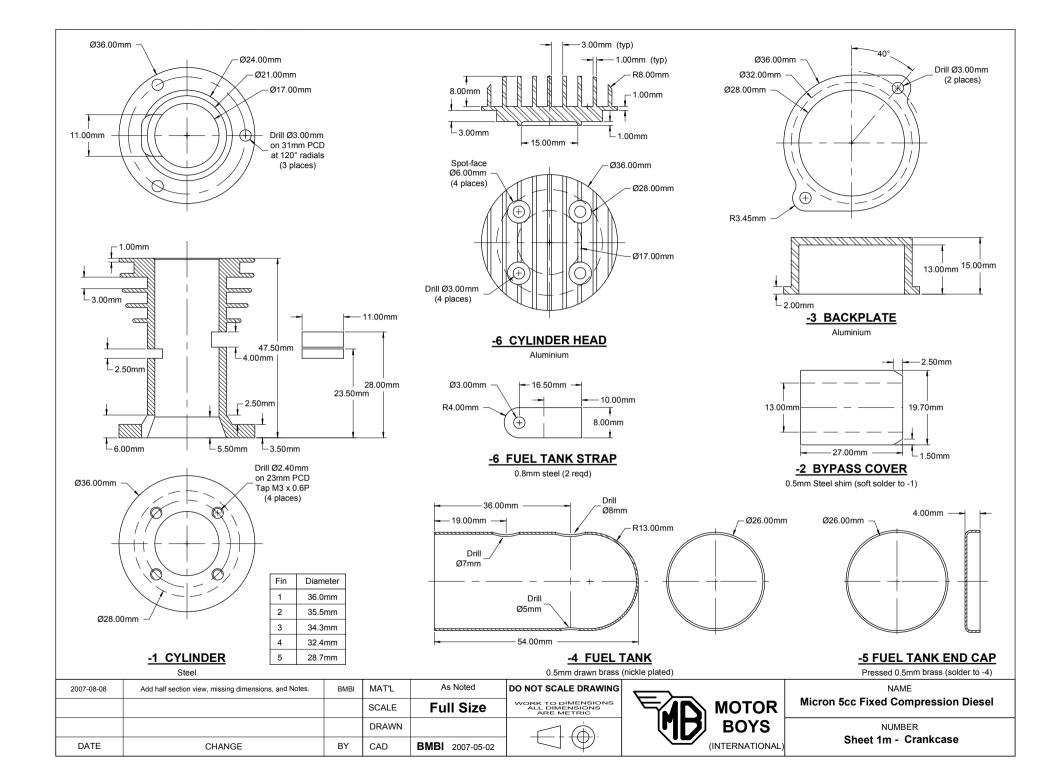
2007-08-08	Add half section view, missing dimensions, and Notes.	ВМВІ	MAT'L	As Noted	DO NOT SCALE DRAWING
			SCALE	Full Size	WORK TO DIMENSIONS ALL DIMENSIONS ARE METRIC
			DRAWN		
DATE	CHANGE	BY	CAD	BMBI 2007-05-02	

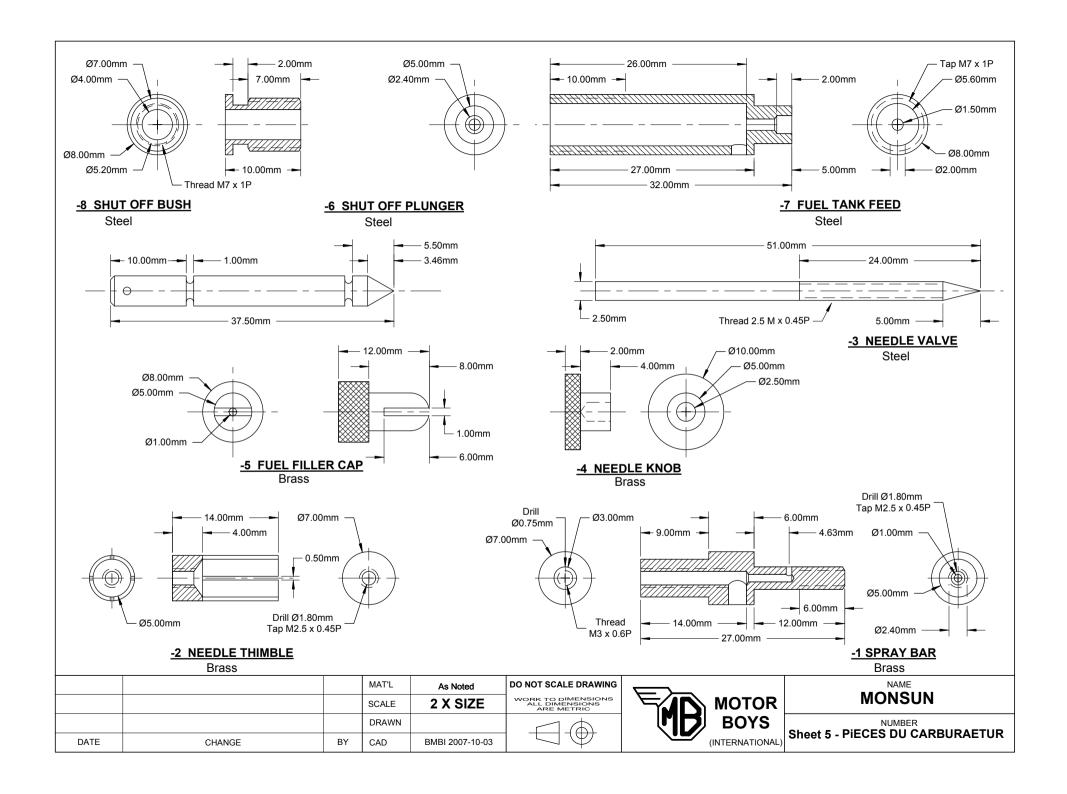


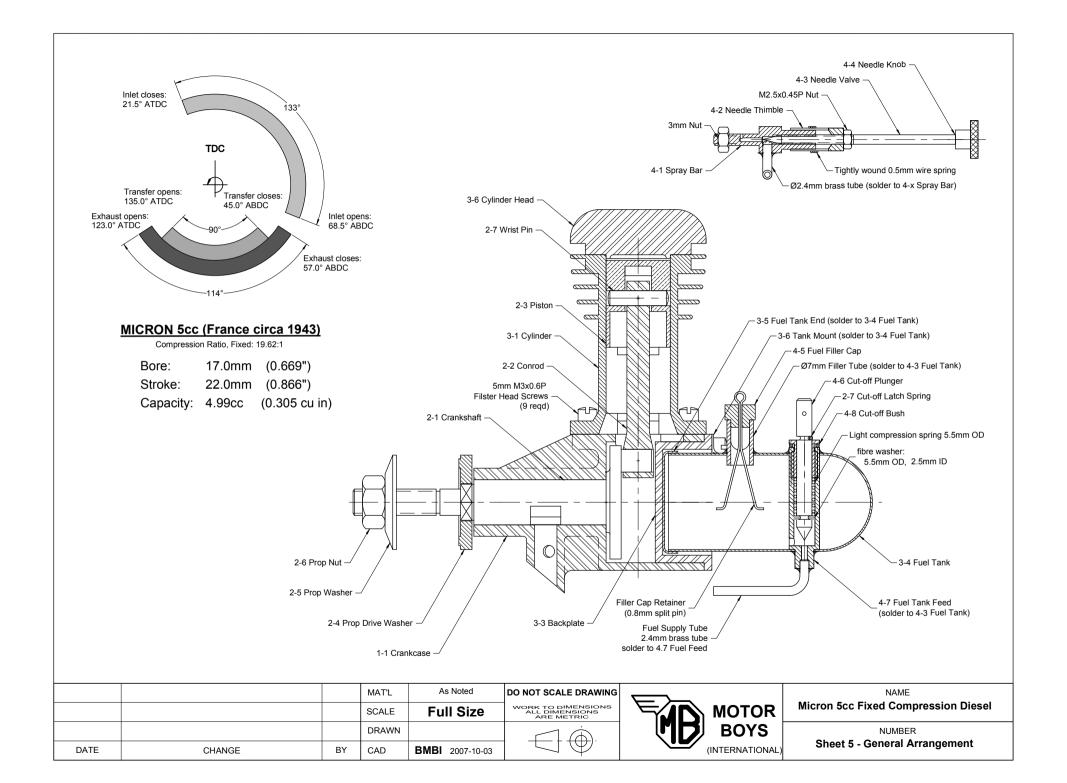
NAME	
Micron 5cc Fixed Compression Diesel	

NUMBER
Sheet 1m - Crankcase









M L MIDGE side-port diesel 0.5cc or 0.8cc

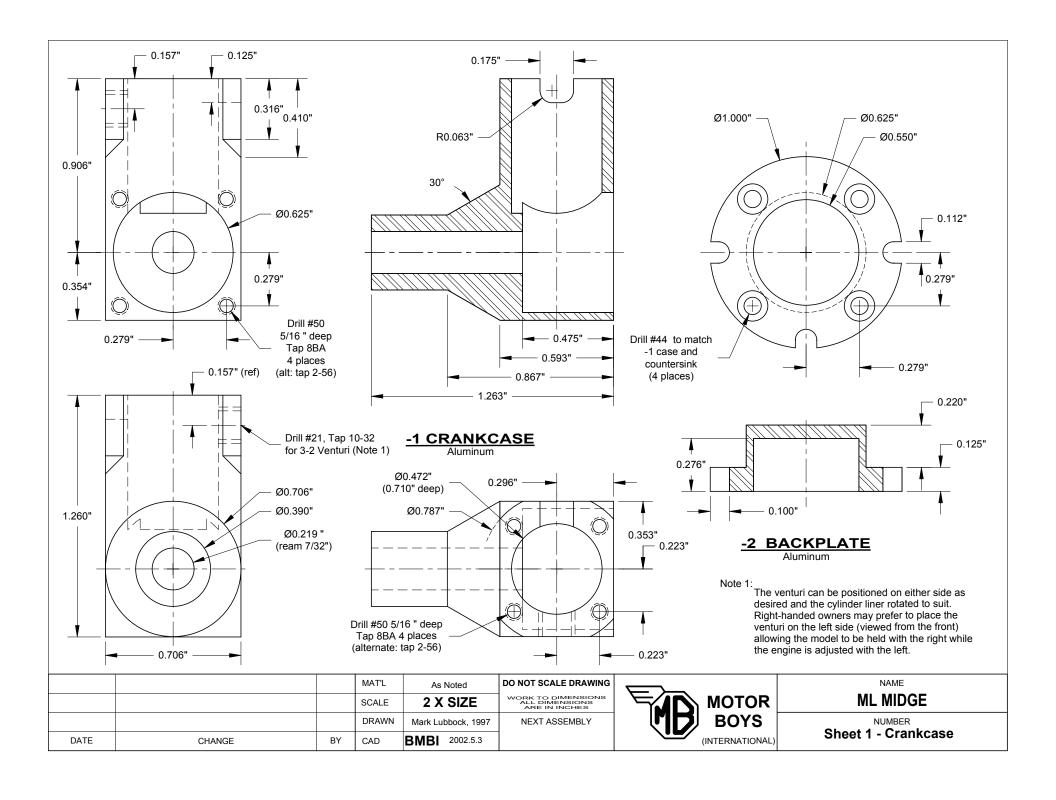


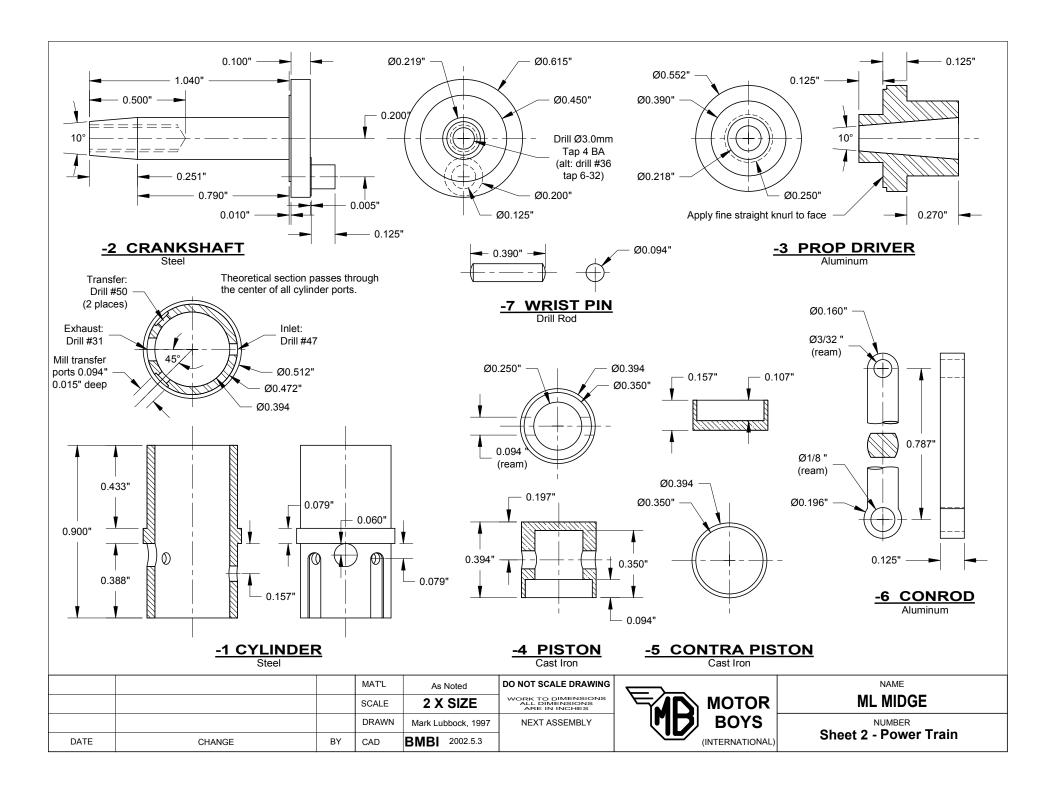
The scheme that uses the piston to control timing for inlet, exhaust and transfer is, for some reason, called "side-port", even though most all examples place the inlet at the back.

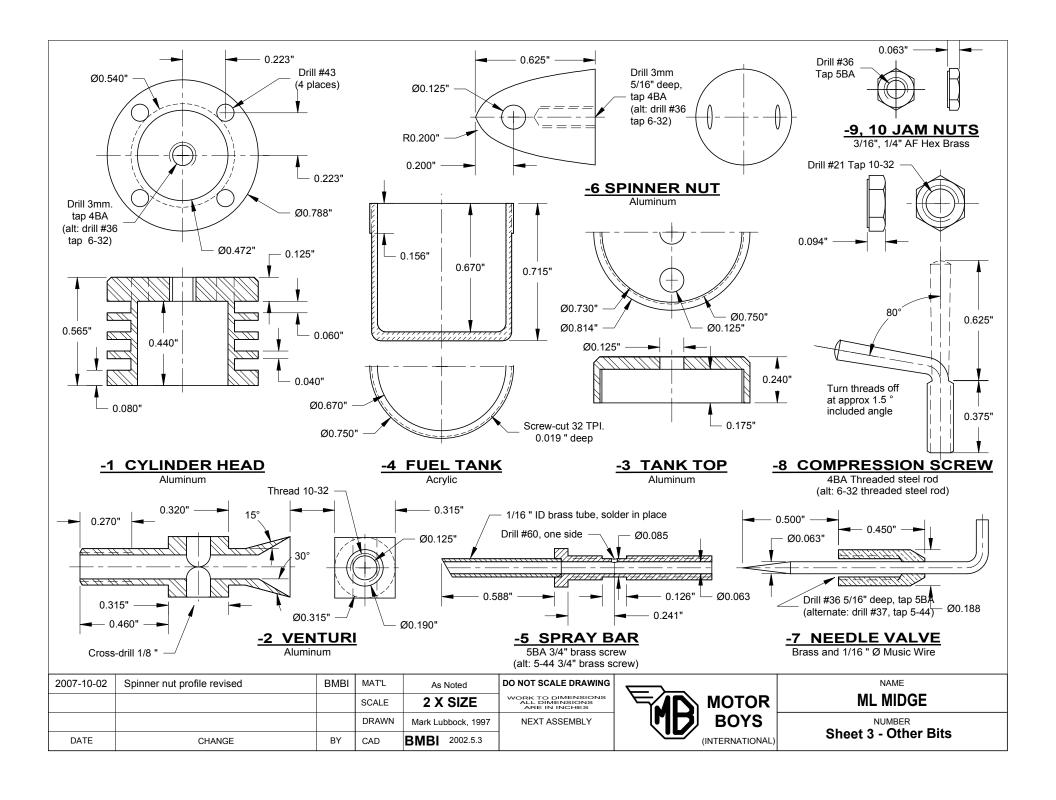
ML Midge is, as the designer asserts, a genuine side-port! The design was serialized in Aviation Modeller International, issues April and June of 1997. It is a little square looking engine. You may not like it until you have built it and run it then you will love it. There are two sizes, you can build either 0.8cc or 0.5cc. The designer was a young chap called Mark Lubbock. It was his first ever design, and his first ever home build. It is a winner, and very simple to make.

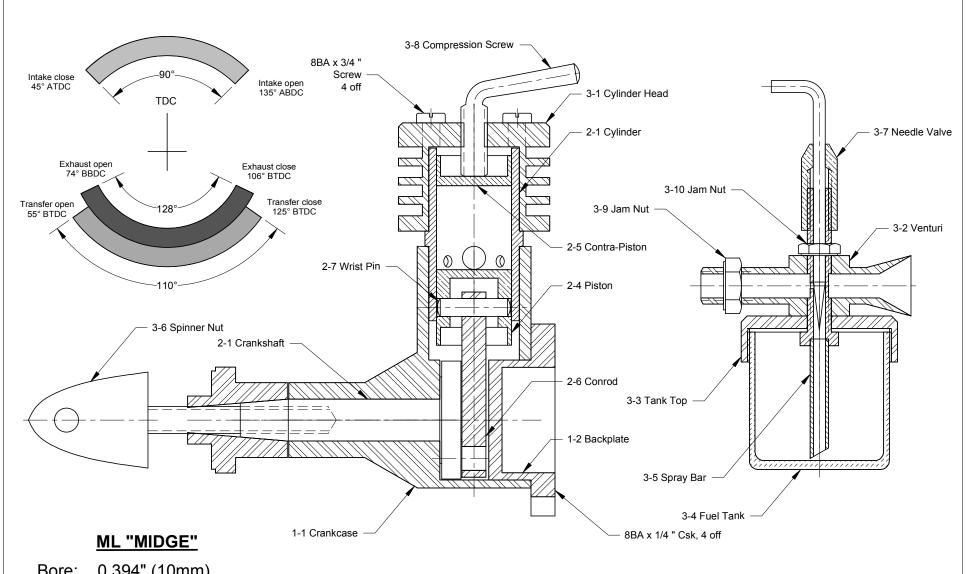
Do not be tempted make any of the ports any bigger, they make for a sweet running and very flexible engine. And when end-milling the transfer ports, don't go too deep or the thin bit of cylinder wall that is left will collapse inwards.

Note that in the photograph above, the two engines have the carb on the opposite side to that detailed on the plan and as per the original design. This is because they were built by an Australian to his own preference!









Bore: 0.394" (10mm) Stroke: 0.400" (10.16mm) Capacity: 0.049 cu in (0.798 cc)

			MAT'L	As Noted	DO NOT SCALE DRAWING	
			SCALE	2 X SIZE	WORK TO DIMENSIONS ALL DIMENSIONS ARE IN INCHES	
			DRAWN	Mark Lubbock, 1997	NEXT ASSEMBLY	
DATE	CHANGE	BY	CAD	BMBI 2002.5.3		

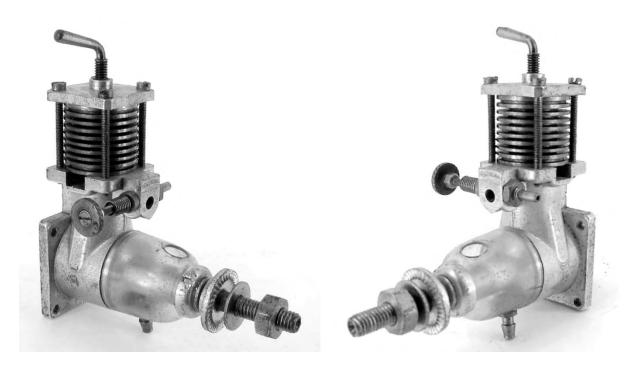


	NAME	
ML	MIDGI	E

NUMBER

Sheet 4 - General Arrangement

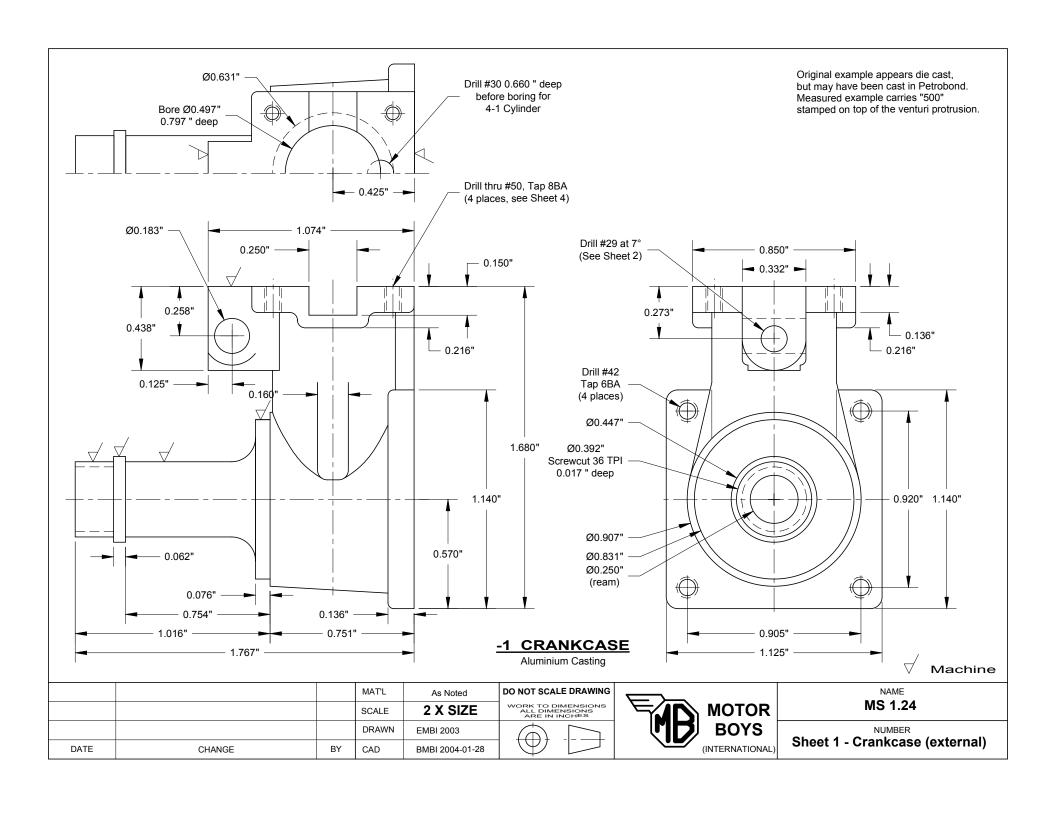
M S 1.24 cc diesel

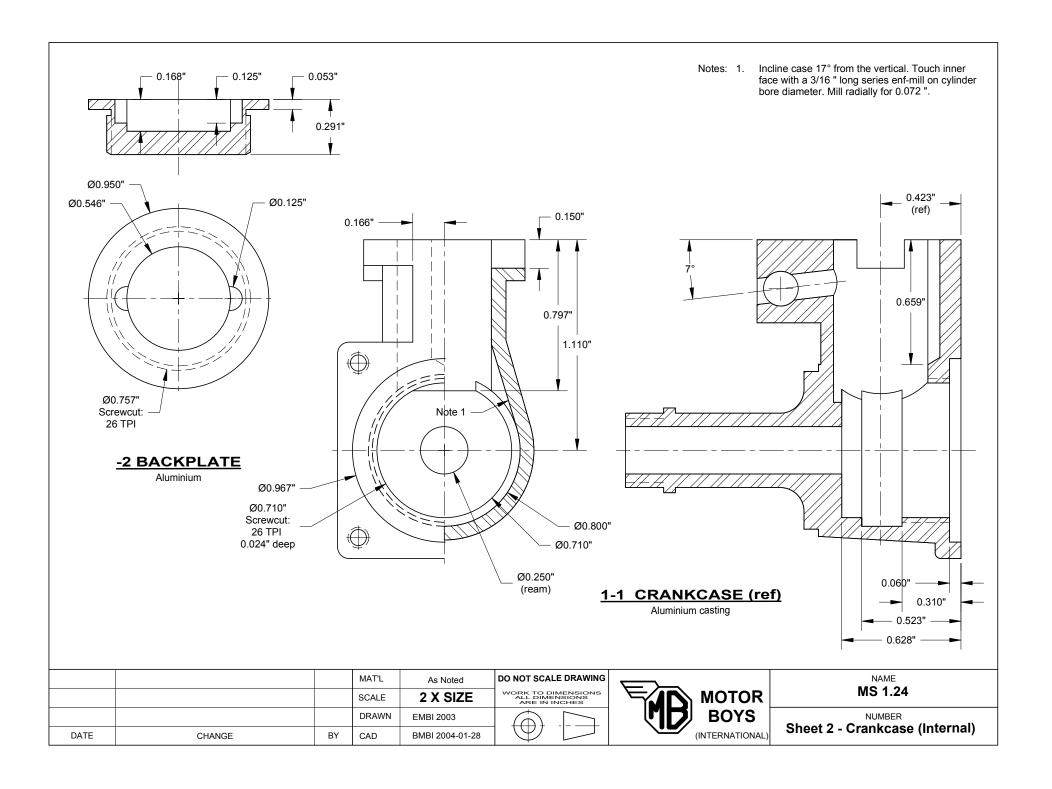


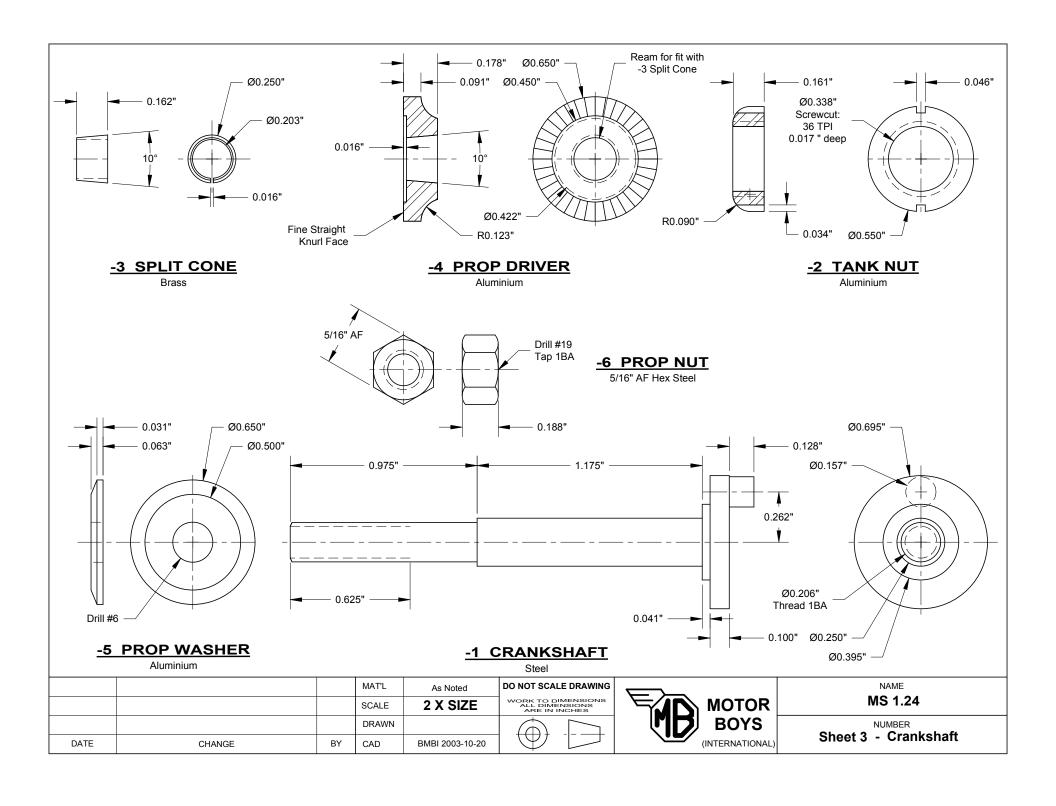
The MS diesels were made by one of the earliest if not *the* earliest model shop in England, the Model Shop Newcastle. They made a small diesel which is about 1.24cc and a larger one at about 2.4cc. Both engines are rarer than hens' teeth, or rocking horse droppings; even the shop that made them in the late 40's, still trading, does not have an example of them.

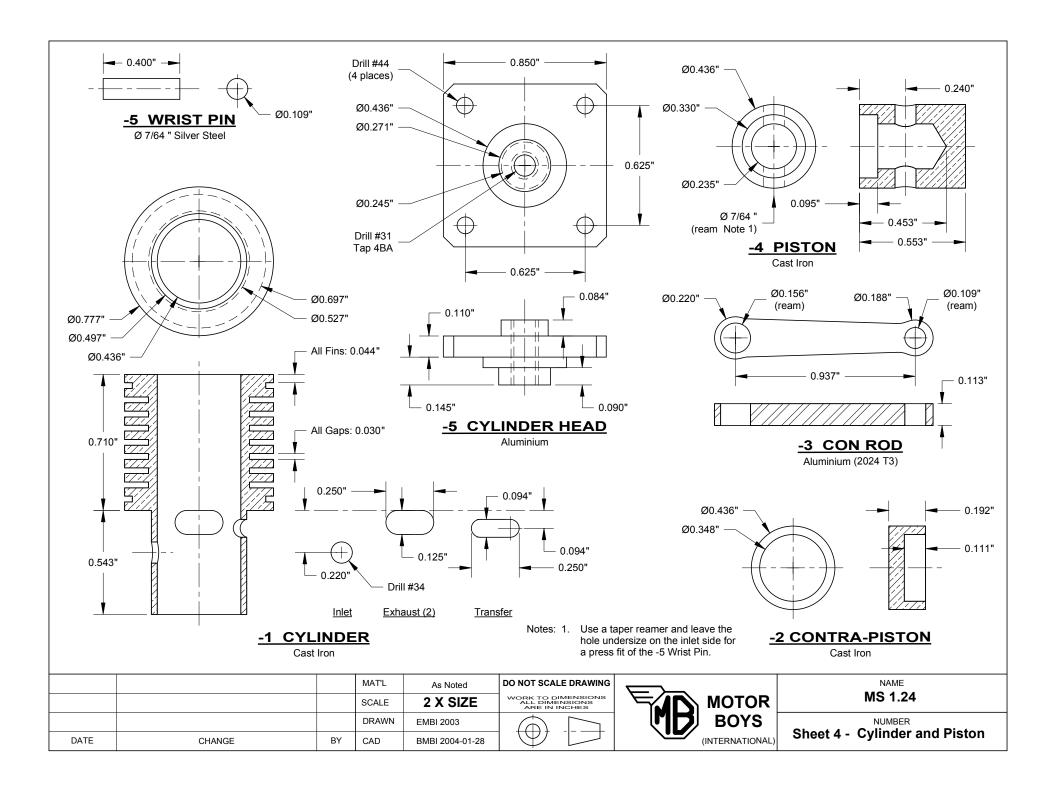
The 1.2cc engine is a sort-of conventional sideport, except the carb is at the front, and the tank is around the front housing. The cylinder fins are square. The bigger one, 2.4cc I think, has an eccentric crankshaft bush to vary the compression, and also has square fins.

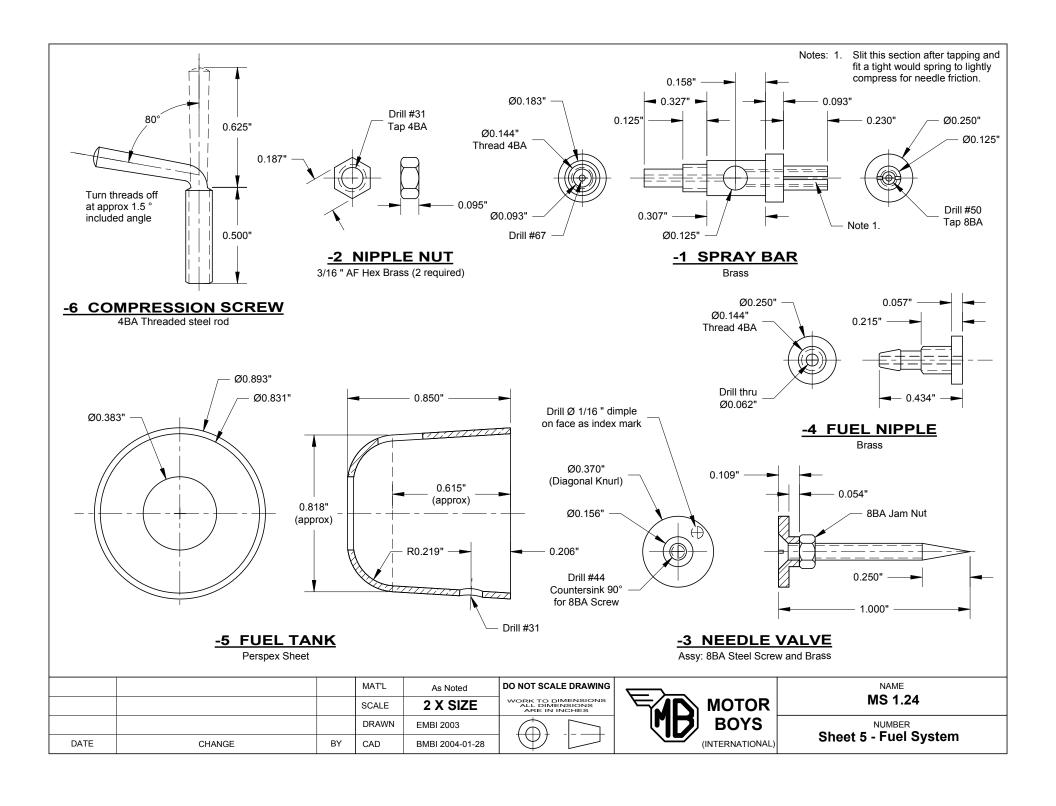
Both engines were made by the proprietor of the shop, Charlie Lutman, at a factory in the Team Valley, near Newcastle upon Tyne. They also made fuel tanks, pilots, and a whole range of goodies. The factory is long gone, as is Charlie, but the shop is still going on in Newcastle, run by Charlie Lutman's daughter-in-law and his grandson [I think]. Real historians will know some more than this, but not a lot more.

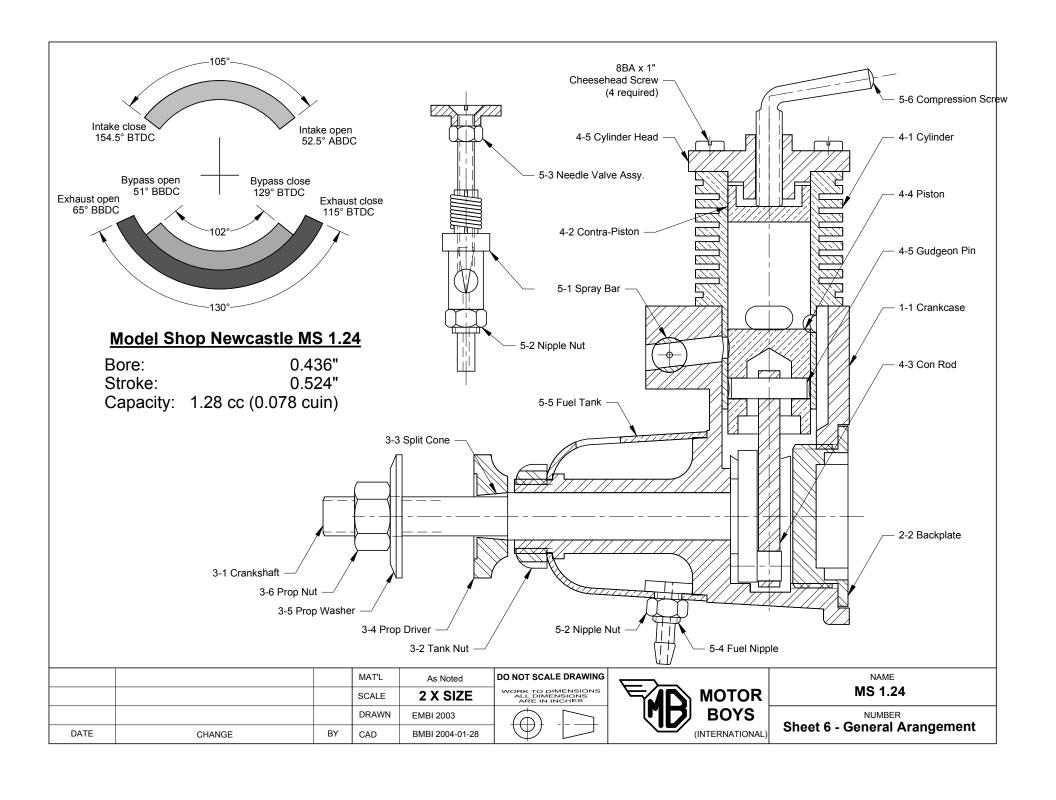




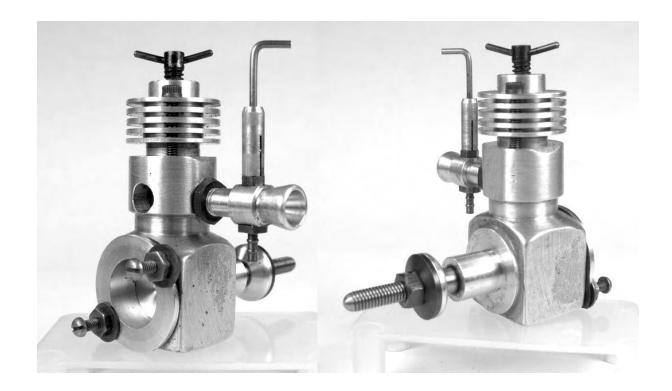






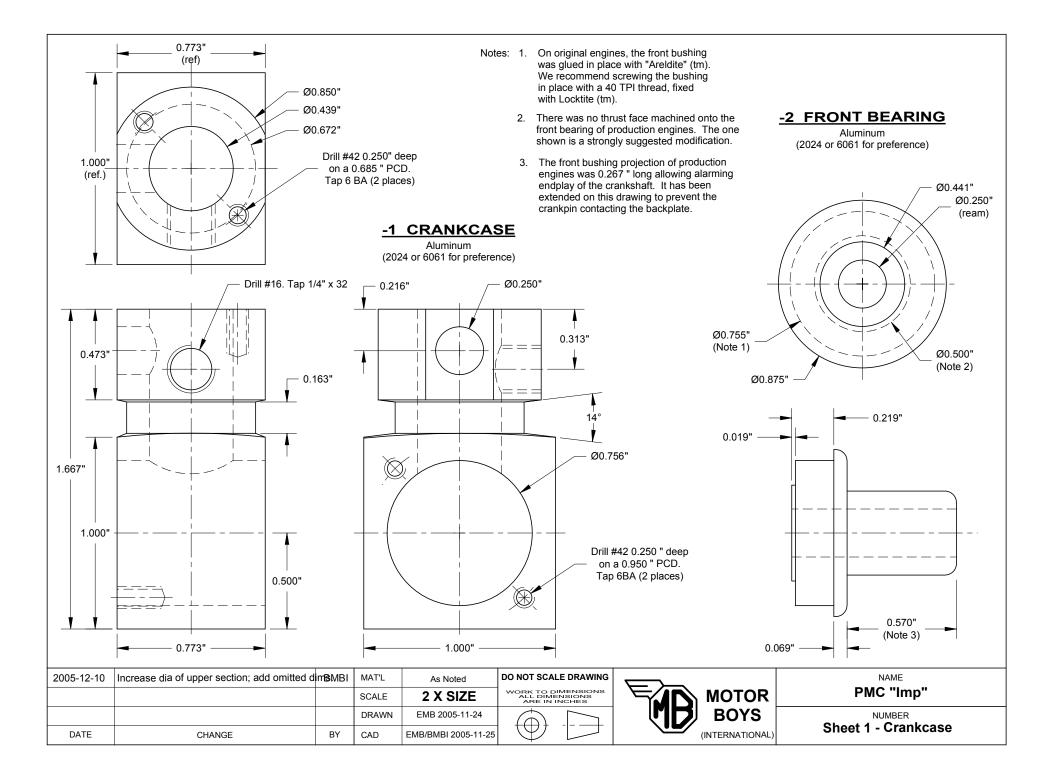


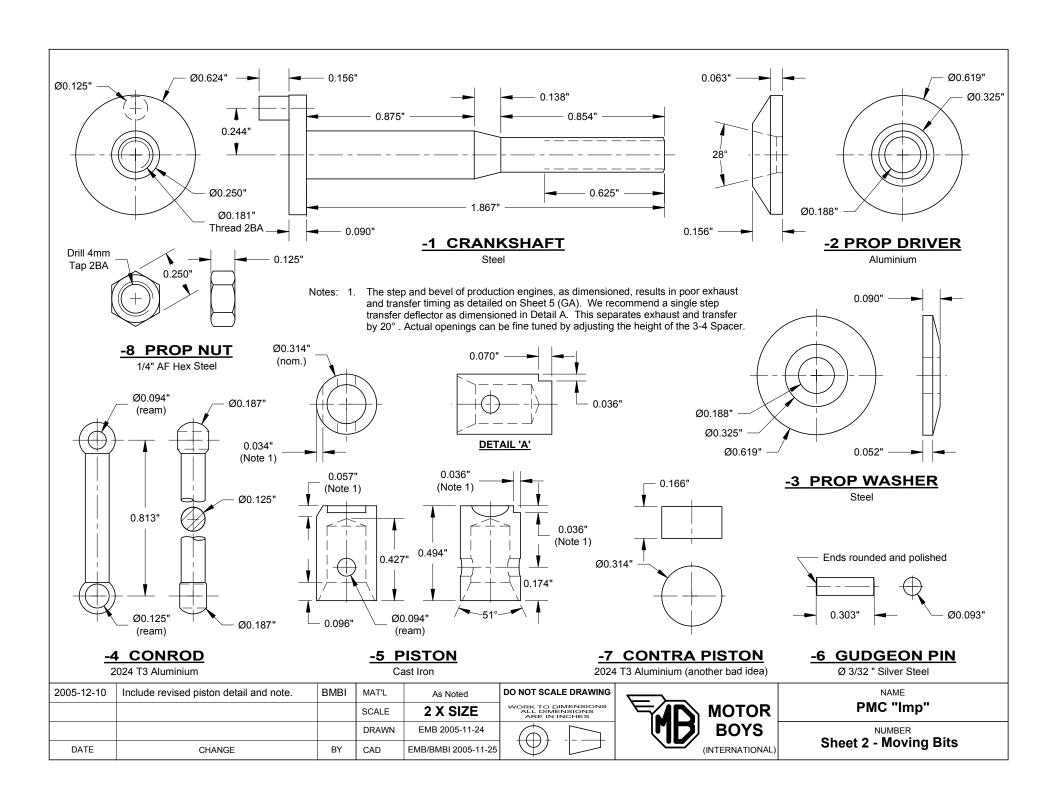
PMC IMP

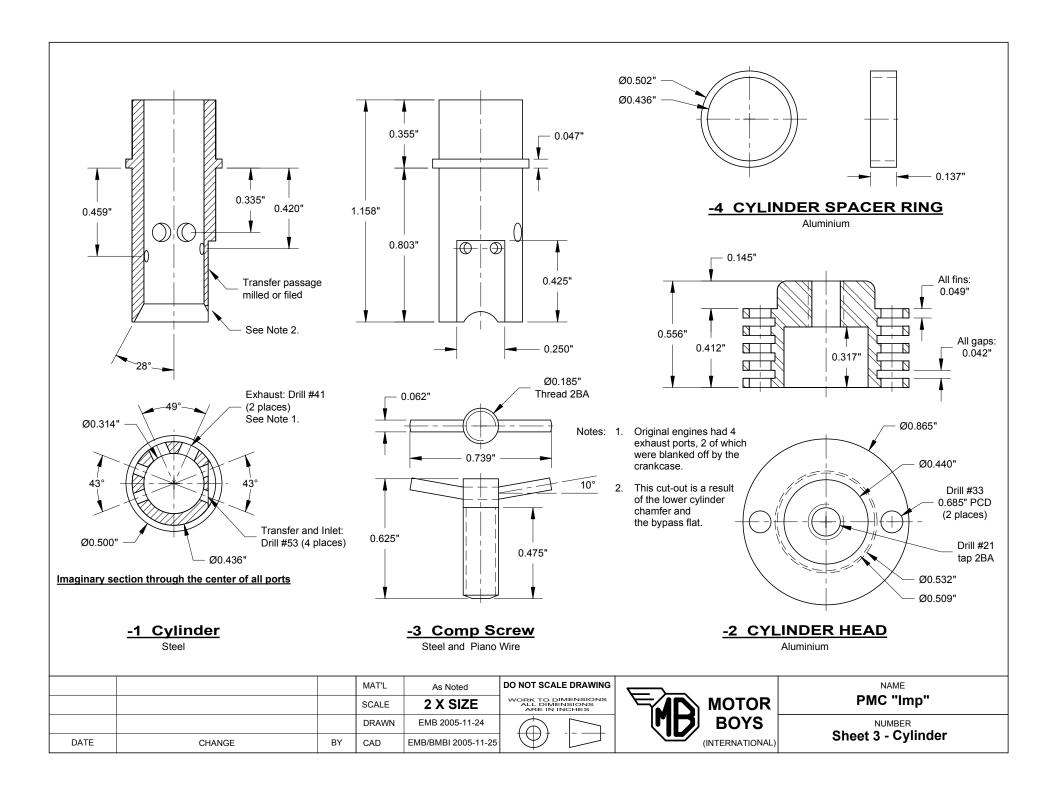


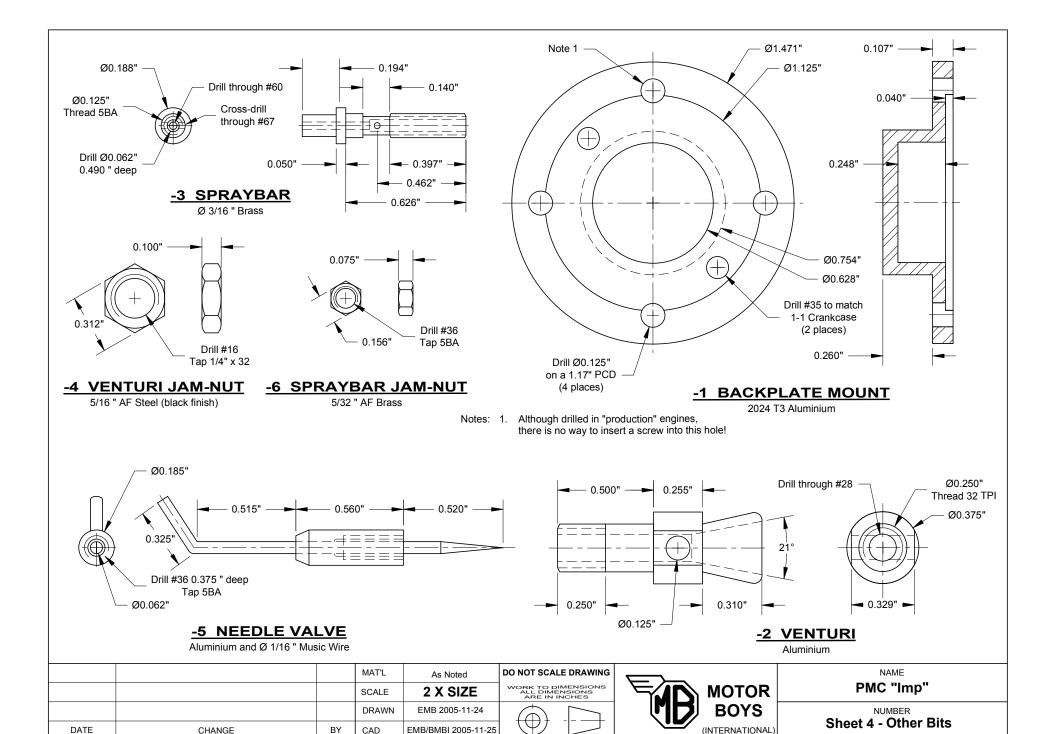
The Aeromodeller of March, 1968 announced the release of the first new English diesel for some appreciable time. The makers were given as Messrs. Moore & Baily of Groby, Leicestershire; Peter Chinn observed that entirely new British engines were "...somewhat rare these days". The following month, he followed up with more detail, highlighting an unusual feature of the engine which was supplied with three spacing rings of different depth (7/64, 1/8, and 9/64"). These permitted the user to vary the position of the cylinder ports in relation to the crankcase axis, effectively altering the timing of the engine—a unique and curious feature. This engine was the EmBee 75.

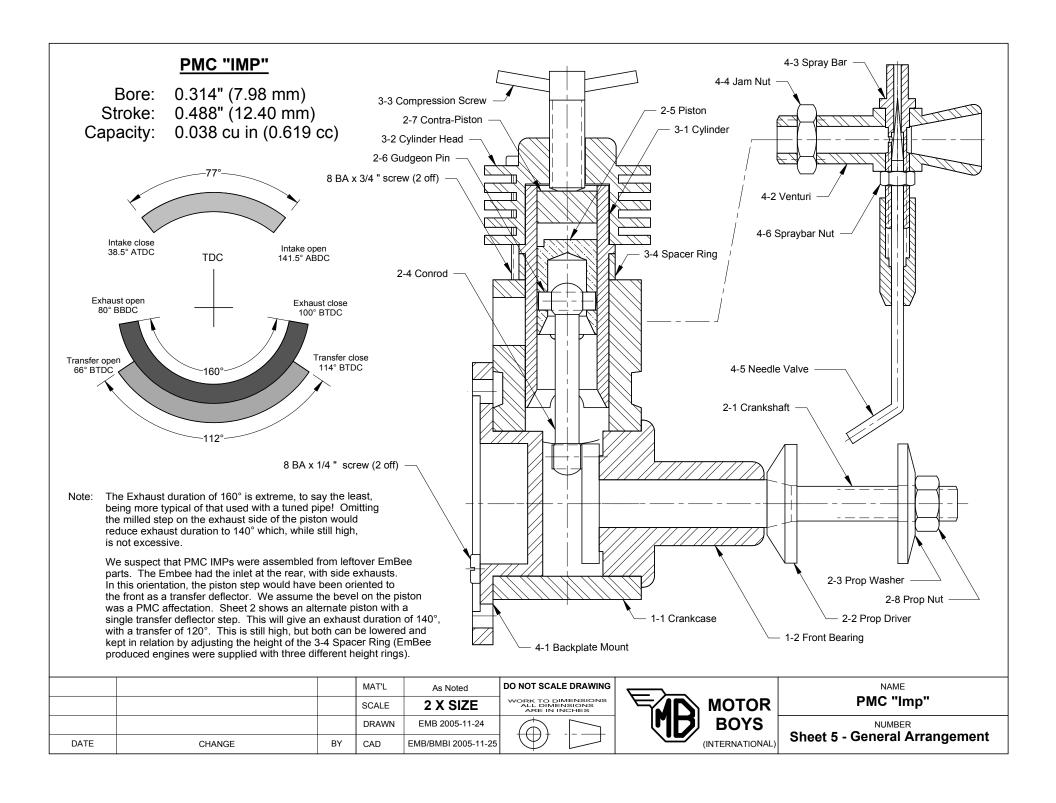
A variation on the engine re-surfaced in a single advertisement appearing in the October 1980 issue of the *Aeromodeller*. The ancestry is obvious; the most significant change being the transposition of the inlet and the exhaust. And proving that it always pays to read the fine print, note that the add states *Prototype engine photo only*. Now called the "PMC IMP", the capacity was unchanged and although no manufacturer was stated, we now know it was being produced by Peter Moore on the Isle of Mann.











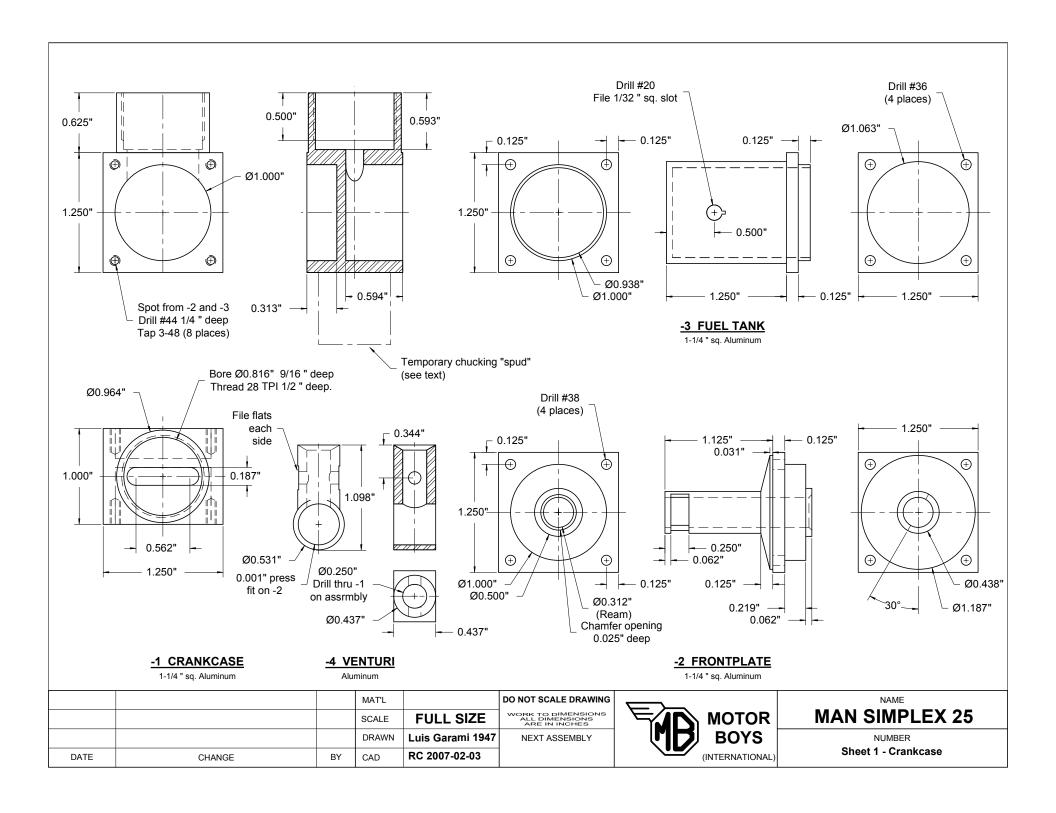
M.A.N. SIMPLEX 25

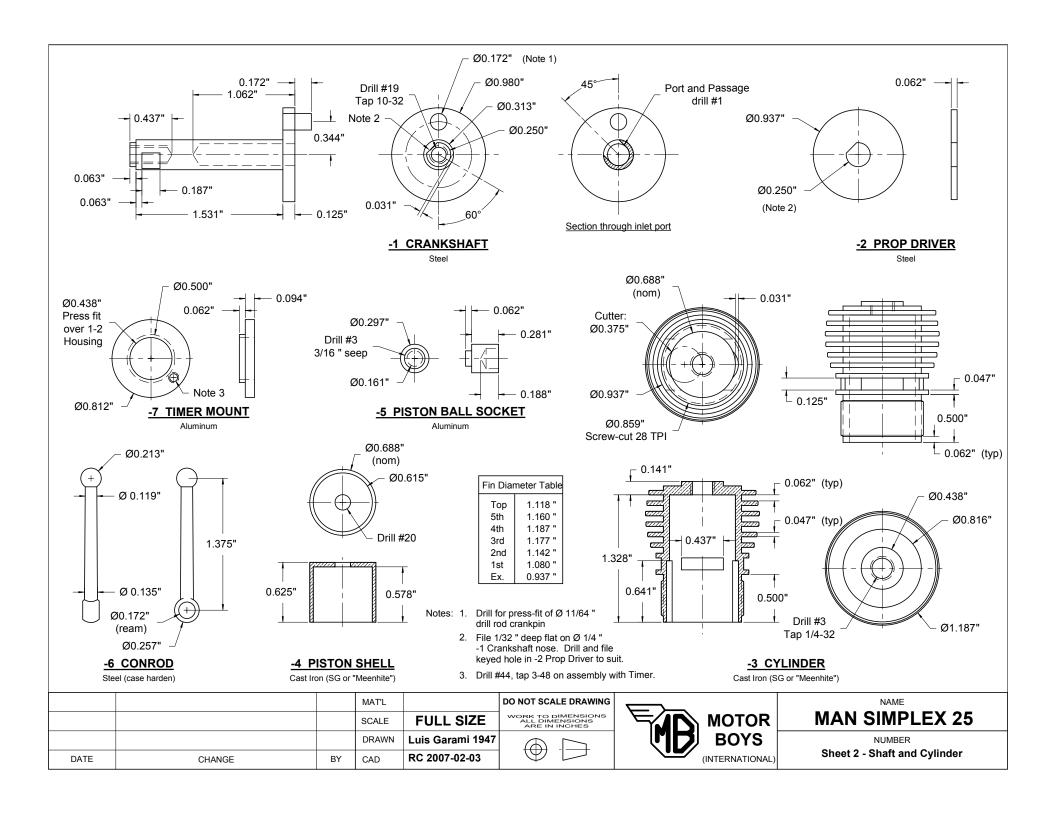


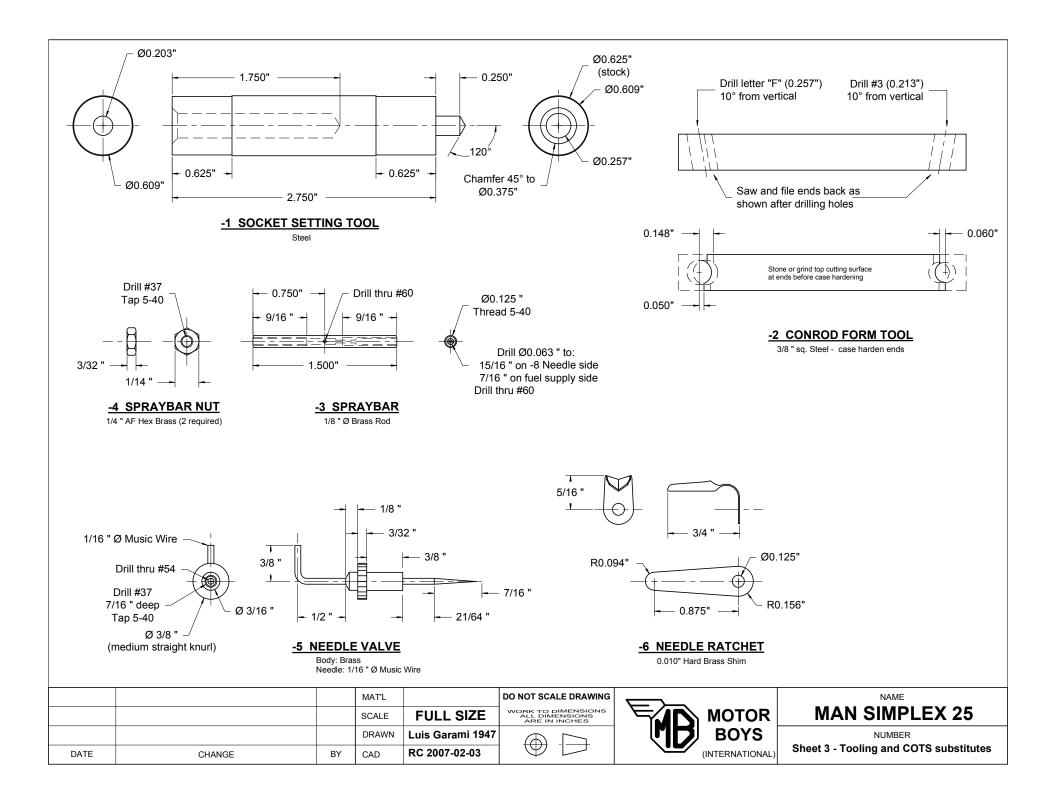
The SIMPLEX 25 was serialized over the March and April issues of Model Airplane News for 1947. The design and articles are credited to Louis Garami. The SIMPLEX is a 0.25 cu in (4.2cc) spark ignition engine designed to be built from readily available materials on minimal equipment. In the words of the designer, "...the simplest design consistent with good results."

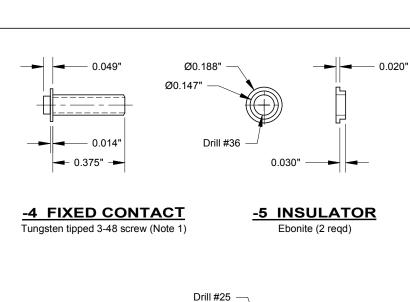
The text went on to say that it was assumed that the reader/builder had reasonable knowledge of lathe operations. This was not an unreasonable assumption for the America of 1947.

The SIMPLEX design briefly re-surfaced in 1978 as a limited edition production from John Morrill. Billed as the Mk II, the Morrill SIMPLEX is rather attractive in an angular sort of way. The obvious design changes are a screw-in head (no blind-bore to hone), a different timer that appears to be based on a commercial points assembly, and the case has conventional mounting lugs. About 50 (or 115) engines were built.









Ø0.625"

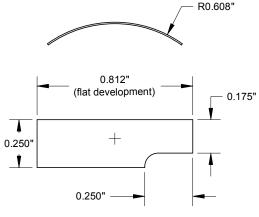
0.145"

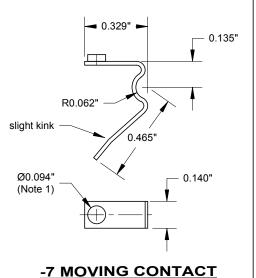
(+)

← 0.395" **←**

0.270"

Drill #36





Ø0.938"

Ø0.813"

Ø0.437"

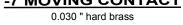
31

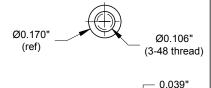
6 Spring

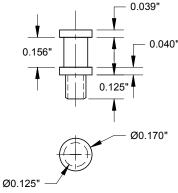
0.008" clock spring steel

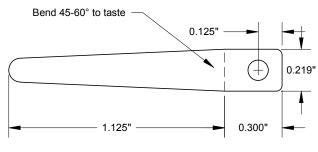
practical.

Notes: 1. Tungsten rivet points, once plentiful, are now almost extinct. Use them if you've got them. Otherwise, you can turn them from tungsten welding rod. Failing that, drill rod will work, although the use of a transistor switch on the coil is recommended to reduce the current and so reduce pitting, making "soft" points









-1 TIMER SHELL

0.106"

Aluminum

-2 TIMER ARM 0.050" Steel

			MAT'L	As Noted
			SCALE	2 X SIZE
			DRAWN	Les Stone
DATE	CHANGE	BY	CAD	RC 2007-01-05

DO NOT SCALE D	RAWING
WORK TO DIME ALL DIMENSI ARE IN INCH	ONS
-[



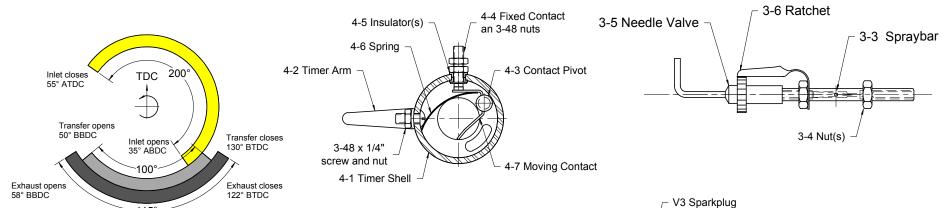
-3 CONTACT PIVOT

NAME

MAN SIMPLEX 25

NUMBER

Sheet 4 - TIMER (O&R 29)



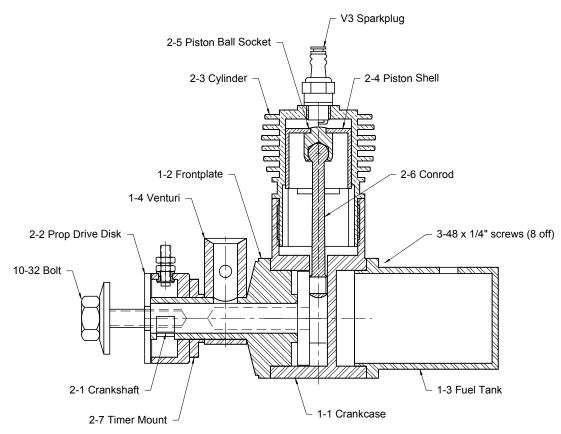
Model Airplane News SIMPLEX 25

Designed by Louis Garami.
Published in Model Airplane News (MAN) issues of March, 1947 and April, 1947.

Bore: 0.688 " (17.48 mm)

Stroke: 0.688 " (17.48 mm) Capacity: 0.256 cu in (4.19 cc)

Compression Ratio: 8:1



			MAT'L		D
			SCALE	FULL SIZE	\
			DRAWN	Luis Garami 1947	
DATE	CHANGE	BY	CAD	RC 2007-02-03	

DO NOT SCALE DRAWING

WORK TO DIMENSIONS
ALL DIMENSIONS
ARE IN INCHES





MAN SIMPLEX 25

NUMBER

Sheet 5 - General Arrangement

SPAREY TWIN 2cc



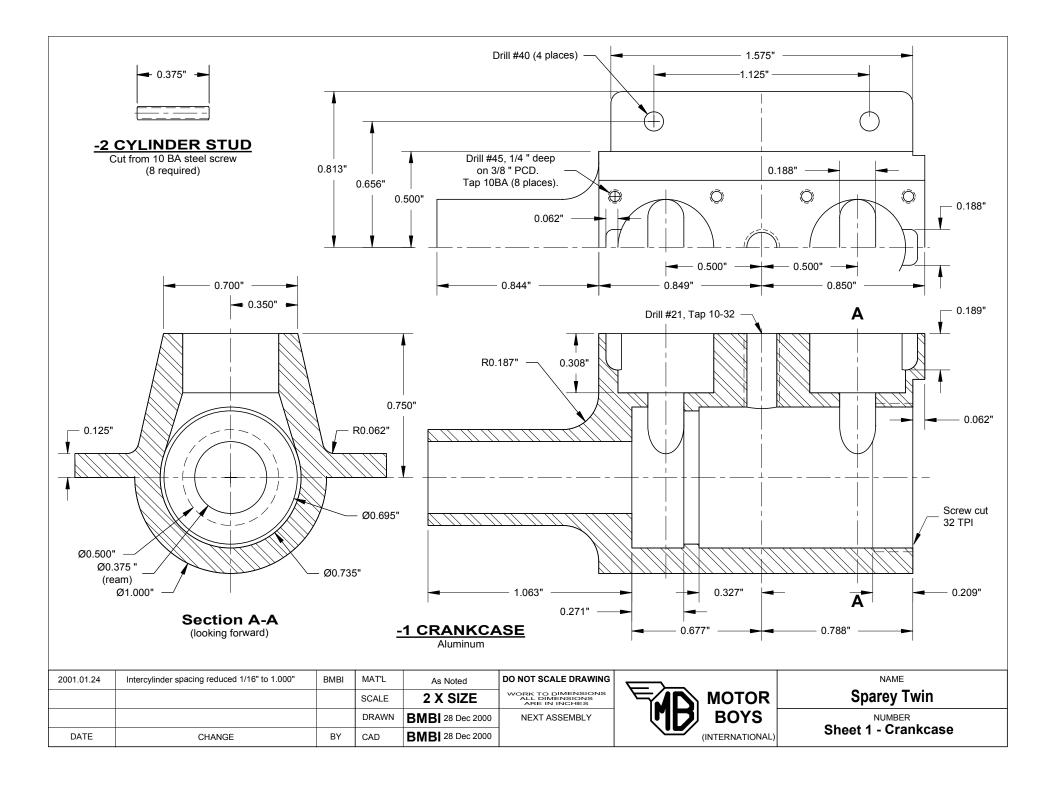
We Motor Boys often got up to some crazy ideas, and in the year 2000 Ron Chernich and myself decided that we would each make an engine to celebrate what everyone called "the Millennium". The little engine known as the Sparey 0.8 [actually 0.64cc] had long been one of my favourite flying engines, and since I fancied the challenge of a twin, then a twin based upon two little Spareys, making just 1.28cc, was my choice. Ron had already built a few little Spareys in 2000 but he had up-sized his to 1cc. Consequently he fell in line with my plans to build a twin, but his was to be 2 x 1cc based on his success with the single.

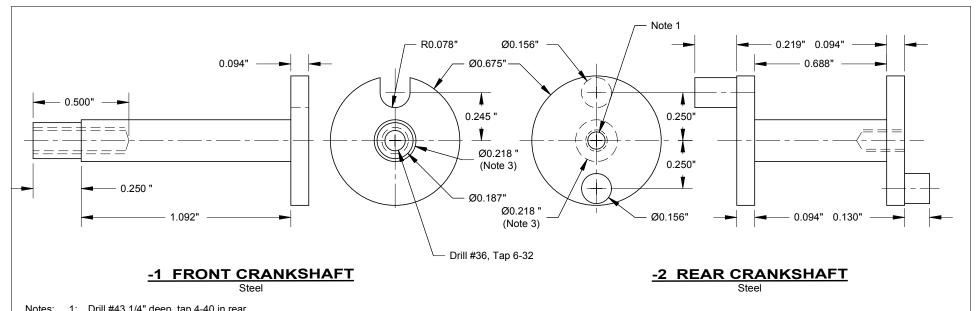
The big problem with alternate firing in-line twins is the sealing of the two separate crankcase chambers. This was achieved by the use of a split bobbin closely fitted into the case and sealed with twin "O" rings. The bobbin is shown as an inset in the heading composite image.

My engine was completed and ran nicely though it was a little heavy at 190 gm [6.75 oz] to be a flying engine of just 1.28cc. So it sits on a shelf.

I know not the reason, but although construction of Ron's engine got to an advanced build, it never seems to have been completed. No photographs exist other than of some of the parts.

Ron's 2cc version is the one presented in the plans, but the images here are of my own 1.28cc version. The differences are only in the dimensions, all details being the same.

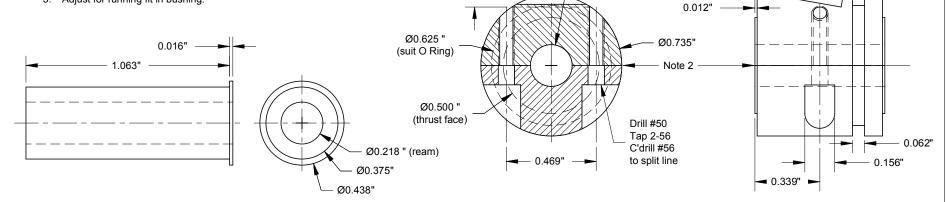




Notes: 1: Drill #43 1/4" deep, tap 4-40 in rear web for assembly extraction tool.

 Soft solder segments together and center accurately on seam before machining.

3. Adjust for running fit in bushing.



0.062"

-3 FRONT BEARING

Bronze

-4 SPLIT BEARING

80°

Bronze

ı							
	2001.01.24	Reduced length of -2 Shaft and -4 Bearing	BMBI	MAT'L	As Noted	DO NOT SCALE DRAWING	
				SCALE	2 X SIZE	WORK TO DIMENSIONS ALL DIMENSIONS ARE IN INCHES	
				DRAWN	BMBI 28 Dec.2000	NEXT ASSEMBLY	
	DATE	CHANGE	BY	CAD	BMBI 28 Dec.2000		



Ø0.218 "

(ream)

NAM	E
Sparey	Twin

Sheet 2 - Crankshaft

0.654"

0.094"

